

# Restoration of the Aggregates Quarry at Tullykane, Kilmessan Co Meath.

## *Environmental Impact Assessment*

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## 1.0 INTRODUCTION

### 1.1 General Background

Projects likely to have significant effects on the environment *by virtue of their nature, size and location* are subject to the requirement for an Environmental Impact Assessment (EIA). The EIA is a systematic process undertaken to identify and evaluate the potential environmental impact of proposed projects. The EIA also seeks to consider alternatives and propose mitigation measures to ensure the development is carried out within recognised and accepted standards. Thus, the EIA is a dynamic process in which environmental consideration delivers significantly improved project configurations in respect of environmental protection and sustainability. The Environmental Impact Statement (EIS) is the formal statement or document produced as a result of that process.

This EIS pertains to a proposal to fully rehabilitate a limestone aggregate quarry located at Tullykane, Kilmessan, Co Meath. The applicant is Kilsaran Concrete and it is their wish to bring forward the closure of the facility by initiating the rehabilitation process.

### 1.2 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 Limestone aggregate quarry located at Tullykane, Kilmessan, Co. Meath. The Quarry is in the ownership of the applicant Kilsaran Concrete and has been operational for over 20 years under the operational stewardship of Kilsaran Concrete. 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 a small proportion of other construction associated inert fill materials to the site over a 14 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.

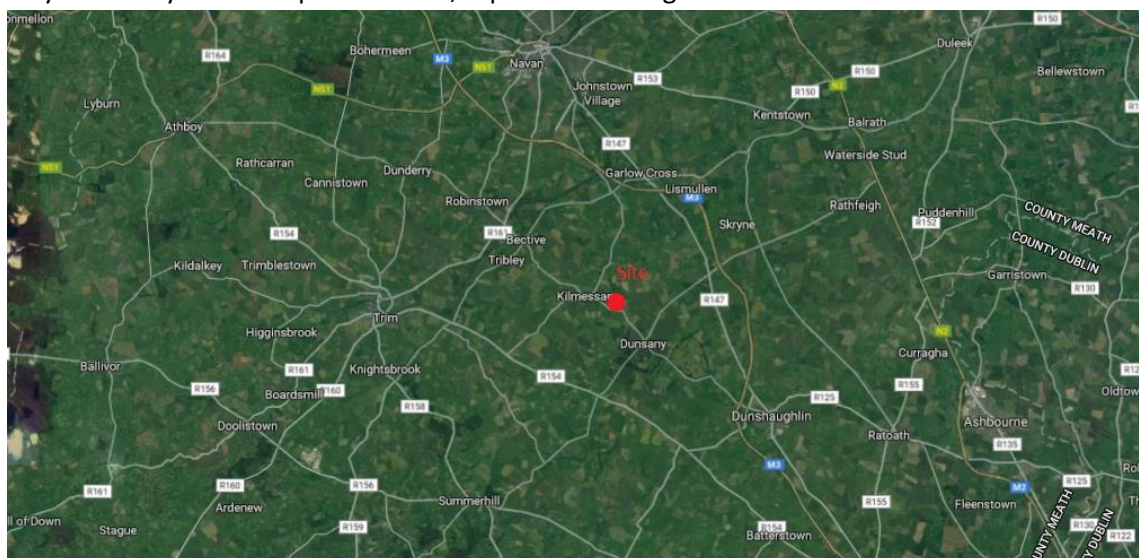
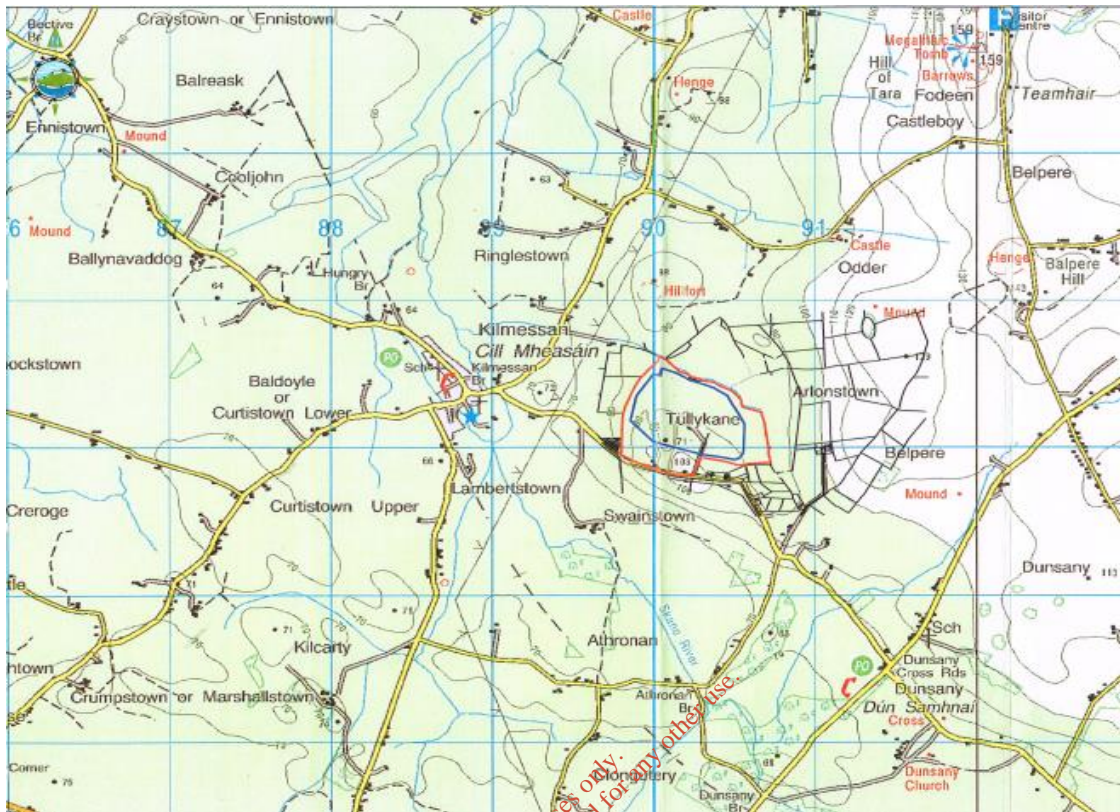


Fig 1.1 Site Location Map





**FIG 1.2 SITE LOCATION MAP(ii)**

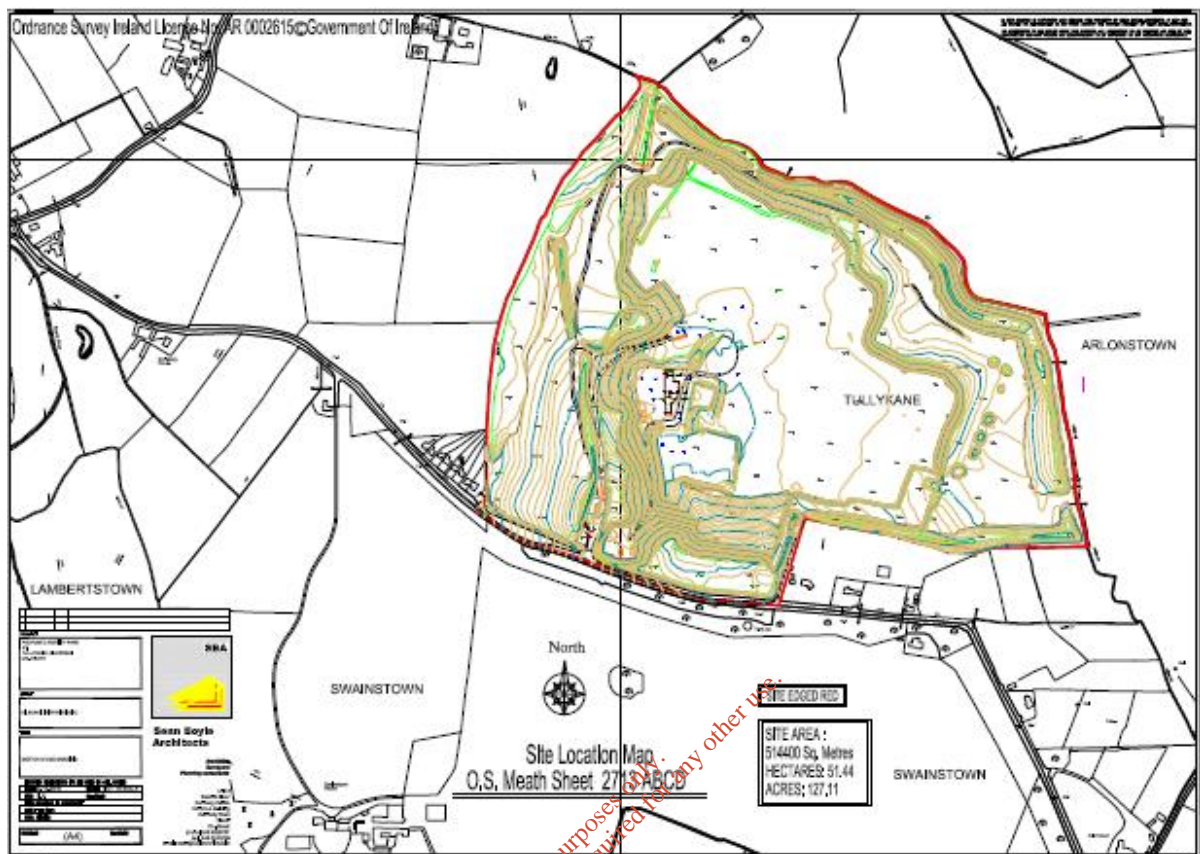
This proposal provides for the importation, placement and capping of approximately 5,600,000 tonnes of inert soil and stone including a proportion of inert construction materials (concrete, block, brick, paving stones, granular fill, ceramics etc.) for the construction of haul roads. The inert materials will be imported by permitted waste contractors only. It is proposed in this application that the project in its entirety will take 14 years to complete at a backfill rate of 400,000T per annum.

In addition to the proposal to backfill the quarry it is also proposed to provide for the local community a public amenity park comprising a sports field, biodiversity walks, sensory parks and a children's playground. This park will be located to the south west of the site and will see Kilsaran Concrete gift this park to the community should it be in a position to accept it.

## 1.2 The Site

### 1.2.1 Site Location

The site is located entirely within the townland of Tullykane, Kilmessan, Co. Meath, approximately 1.2km south-east of the village of Kilmessan on the Local Road L2206 (Kilmessan – Dunsany Rd) and 8km north-west of Dunsany, Co Meath. Irish National Grid Coordinates (E689895, N756969). The plan extent of the lands owned by the applicant Kilsaran International is outlined in red on a map of the area, reproduced as Figure 1.3. The plan extent of the application site is also outlined in red on the same figure. Both are the same in this instance.



**Fig 1.3 Land under the ownership of the applicant**

### 1.2.2 Site Description

The total land ownership boundary encompasses an area of 51.44Ha. The lands surrounding the site are generally agricultural in nature with a small number of dwellings located along local L2206. The nearest town is Kilmessan (approx. 1.0 km North West) and Dunsauglin (8km South East). The quarry itself is screened from the L2206 road by a substantial and well established hedge line with the exception of the main entrance. The quarry on its northern boundary has seen the development of a large screening mound to visually screen the operations from the Hill of Tara historical site. This screen has become overgrown at this stage and very well established.

The character of the landscape is that of a rich pastoral landscape, and one of rich cultural heritage. Land within the holding of the applicant, 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. The quarry heretofore has been a significant contributor to the raw materials requirements of the county and of the greater Dublin Region. Quarrying in the Tullykane area is long established with records demonstrating a history of quarrying on the site going back over 100 years. The quarry itself has a depth of up to 18 metres at a point and it is the intention of this application to restore the quarry to its previous heritage that being agricultural land.

### 1.2.3 Site Access

The site is accessed directly from Local Road L2206 which lies on the southern boundary of the site. The site is generally set within an agrarian landscape and is for the most part bounded by mature trees and hedgerow on all sides. The surrounding landscape features a gently undulating terrain marked by woodland and pastureland. The quarry is substantially screened from views from the adjoining road network. Local Road L2206 connects the villages of Kilmessan and Dunsany. Approximately 1km northwest of the existing quarry access Local Road L2206 links to L2205 in Kilmessan. These roads principally accommodate local quarry traffic.

Local Road L2206 connects to L2207 at Dunsany some 1.75km southeast of the existing site access. To the north the L2207 provides access via Belpers Cross to the R147 (Former N3 National Primary Road) which lies approximately 3.9km north of Dunsany. From the R147 traffic has access to the M3 Motorway at Junction 7 to the north and Junction 6 to the south near Dunshaughlin. Approximately 3km to the south of Dunsany Local Road L2207 connects to the R154 between Batterjohn and Cross Keys.

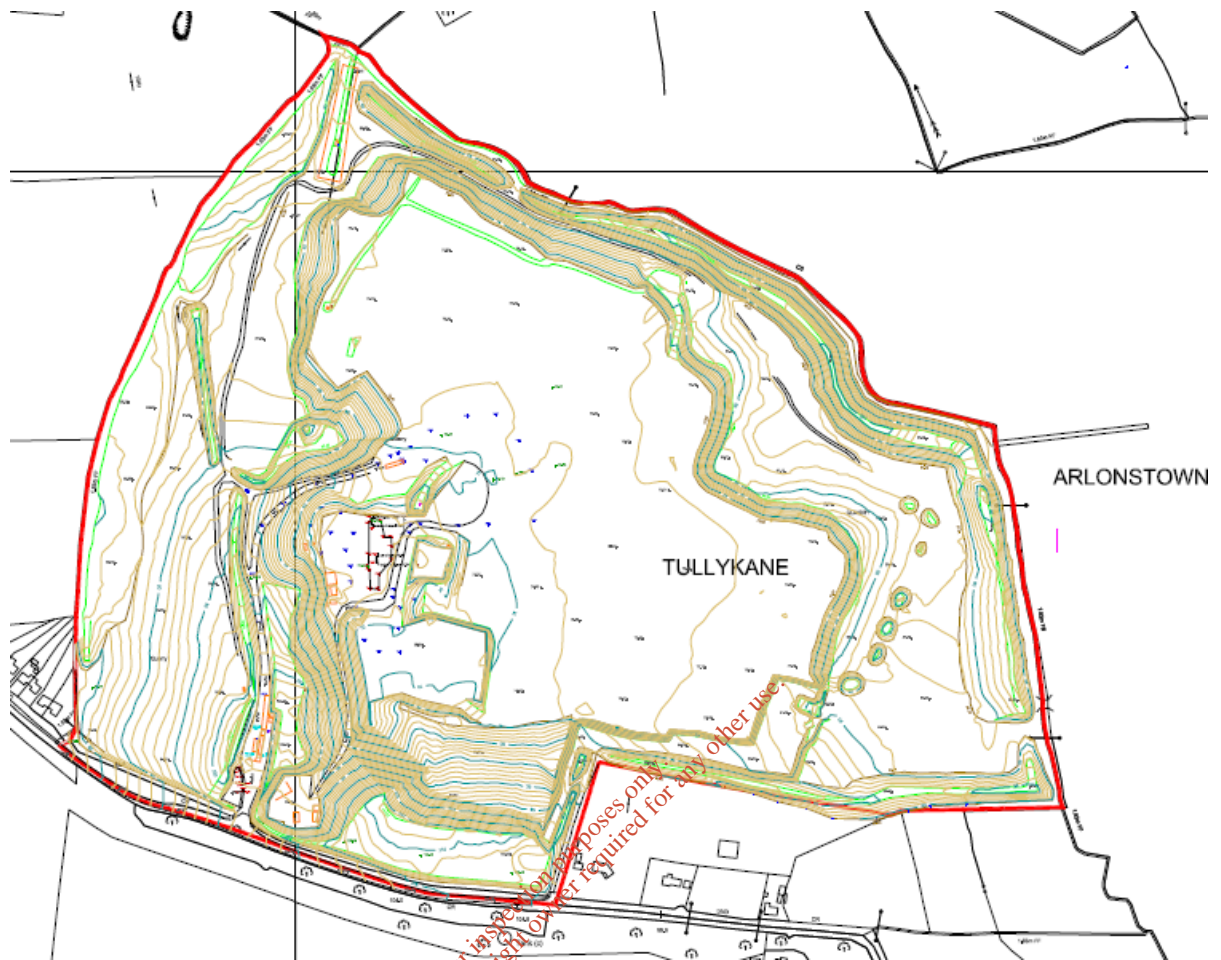
### 1.2.4 Surrounding Land Use

The application site and existing sand and gravel quarry is located largely in an agricultural area. There are a number of one-off 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.

## 1.3 LAND OWNERSHIP

The lands within the application site are fully owned by Kilsaran Concrete, the applicant. The estate is in the full ownership of Kilsaran Concrete and represents 51.44 ha.





**Fig 1.4 Plan Extent of the site and the land ownership of the applicant**

#### 1.4 THE APPLICANT

The applicant in this instance is Kilsaran Concrete. Primary the business of Kilsaran Concrete is the production of materials for the construction industries, producing paving and walling, pre-mixed dry products, ready-mix concrete, concrete blocks, trowel-ready mortar, aggregates, asphalt and macadam, hard core and fill materials for the Irish and UK markets as appropriate. The company also undertakes surfacing contracts for road construction, building and civil engineering works.

County	Location
Co Cork	Rossmore
Co Dublin	Millennium Park, Lucan, Tallaght, South Bank Road and Ballinascorney
Co Kildare	Ballysaxhills, Brownstown, Halverstown, Kilrathmurry, and Ballykane Hill
Co Kilkenny	Sliverue
Co Laoise	Ballinakill, Portlaoise
Co Louth	Gallstown and Dunleer

Co Meath	Annagor, Ballynamona, Bellewstown, Castletown, Naul, Navan, Piercetown, Rathcore and Tullykane
Co Offaly	Bunaterin
Co Tipperary	Kilfeacle
Co Wexford	Killinick
Co Wicklow	Ballinclare

Kilsaran Concrete employs around 450 people plus 100 further owner drivers and long term haulage contractors. The company also generates downstream employment of subcontractors and suppliers. The Company currently operates ten hard rock quarries and a similar number of sand and gravel pits. Kilsaran manufactures various concrete products from 20 locations, mainly in the east, midlands and south of the country. The company also has four asphalt plants located strategically within extractive sites throughout its operational area and has resources and expertise to undertake this proposed project in house.

Kilsaran is a member of the Irish Concrete Federation, the trade organisation for the concrete products and aggregate industries in Ireland and commits itself to the principles of the Federation's Environmental Code.

## 1.5 Planning History

<b>99/1230 – Meath Co Co Appeal No. PL17.119097</b>	The retention of intensification of a quarry development and associated processing on 46.5 ha including improvements to the existing quarry entrance with provision for new office, wheelwash and relocation of weighbridge <b>Granted following appeal 16/10/01 – 10 years permission</b>
<b>TA/60605 – Meath Co Co Appeal No. PL 17.22391</b>	Readymix concrete and concrete block batching plants, storage building, ESB switch house, ground storage bays, retention of ESB Substation and all associated works: Retention of ESB Substation - Granted Permission for development - Refused <b>11/05/2007 Split decision Grant</b>
<b>TA/802731 – Meath Co Co Appeal No. PL17.233813</b>	the continuation of a quarry development (including associated plant & buildings) previously granted under planning reg ref no 99/1230, including extraction by a further two benches within the previously approved extraction footprint area for a new permission term of 22 years (20 years extraction and 2 years to implement final restoration) on a 46 hectares. The base of excavation will be at 37.1m above ordnance datum). Permission is also being sought for a new Readymix Concrete Batching Facility to be located on the existing quarry floor, comprising - batching house (max height 15.38m) 10 overground aggregate storage bins (max height 14.0m) 3 cement silos (max height 15.47m) intake hopper and 2 conveyor belts, esb substation, 3 ground storage aggregate bays, bunded storage building, prefabricated office building, 6 bay water recycling installation, new septic tank and proprietary effluent treatment system (puraflo). In addition it is proposed to upgrade an existing septic tank by the addition of a second proprietary effluent treatment system (puraflo). An Environmental Impact Statement (EIS) has been prepared in respect of the planning application <b>23/12/2011 Conditional Grant – 20 years + 2 for restoration</b>

As it stands at present the extraction regime at the quarry is currently on hold due in major part to the economic issues faced nationally during the period 2007 to present. As part of the alternatives to the current proposal Kilsaran are assessing whether to restart the extraction operations at Tullykane



for the remaining period until December 12<sup>th</sup> 2031 when the current planning permission runs out. There will then, in line with the existing planning permission be a 2 year period of restoration of the quarry to a level prior to the creation of a lake as part of the finished remedial works.

This application reflects an alteration in the thinking of Kilsaran Concrete in relation to its overall asset holdings whereby the proposed work would provide and economically sustainable methodology to effect the restoration of the quarry and allow for the full recovery of the quarry back to its original state of agricultural land. Commensurate with that Kilsaran have recognised a local need for a public park and as a show of corporate social responsibility and gratitude to the local area the company are willing to gift conditionally a park and playing area to the local community.

## 1.6 Local Resident Engagement

The applicant has at all stages in this process emphasised the importance of local acceptance in respect of the existing operations and of any future proposed operations. In that light the applicant and their representatives have personally approached each of the local residents to make them aware of the proposed development and to garner their opinions in respect of same.

Date	Operation
15/09/2016	Fliers hand delivered to all residences local to the proposed development. The flier drop was conducted by Fergus Gallagher of Kilsaran and Raphael Mc Evoy Consultant (RME Environmental). A number of residents were met on the day and a brief explanation of the proposal was delivered. Each meeting with the residents concluded with the statement that there would be a public meeting held in the coming weeks to discuss the project in full with all concerned parties and stakeholders in the Station House Hotel Kilmessan.
26/09/2016	Fliers hand delivered to all residences local to the proposed development. The flier drop was conducted by Seamus Mc Ateer of Kilsaran and Tony Curran of Kilsaran. This visit was to key residents proximate to the quarry who were not around on the day of the initial visit on 15/09/2016
26/09/2016	Fliers hand delivered to all residences local to the proposed development. The flier drop was conducted by Seamus Mc Ateer of Kilsaran and Tony Curran of Kilsaran. This visit was to key residents proximate to the quarry who were not around on the day of the initial visit on 26/09/2016
03/10/2016	Seamus Mc Ateer and Tony Curran met with proximate local resident Niall O Sullivan who operates a Glamping facility. Purpose of the meeting was to hear Mr O Sullivan's proposal to create a quasi – Eden Project type development as part of the restoration of the quarry.
11/10/2016	Meeting with representatives of the Skane Valley Community Group at the GAA pitch in Kilmessan at 6pm
25/10/2016	Open Evening in the station House Hotel Kilmessan where in excess of 100 people and concerned local residents attended an information evening to learn more of the proposal and also of the proposals for the proposed amenity park. Present was the project design team representatives Sean Boyle Architect and Project Planner, Raphael Mc Evoy Environmental Consultant and Management representatives from Kilsaran.(approx 06:30pm – 9:30 pm)

25/10/2016	A separate meeting was convened with the nearest local residents to the existing and proposed development to discuss their specific concerns borne specifically from their proximity to the proposed development. The core discussions were around the restoration activities and also the proposals for the amenity park and the management of same (approx.. 9:30pm – 10:30 pm)
17/11/2016	Follow up meeting to the proximate local residents meeting at the Station house hotel on 25/10/2016. This meeting was attended by the same Kilsaran representatives and their associated project consultants and by a number of locals who live very proximate to the proposed development site.
23/11/2016	Meeting with representatives of the Skane Valley Community Group at the Kilsaran Offices, Clonee.
07/12/2016	Meeting with Thomas Byrne TD about the proposed development. The meeting was attended by the Kilsaran Management team.
	There were 2 additional meetings held with (resident) Joey Lougherane 1 <sup>st</sup> with (Tony Curran / Seamus Mc Ateer Kilsaran) and the 2 <sup>nd</sup> with Tony Curran and Kilsaran CEO.

The core thrust of the meetings and engagements were primarily that the restoration of the quarry back to agricultural land was a welcome development. It would however be remiss to infer that there weren't very serious and vocal concerns voiced at the local residents meetings initially and certainly when through the passage of time the residents had had an opportunity to discuss amongst themselves the possible ramifications of a resumption of activities at the site. These were very openly and candidly discussed at the follow-up meeting on 17<sup>th</sup>/11<sup>th</sup> / 2016.

The core issues emanating from all of the meeting are summarised below:

#### **A: Issues around the restoration activities as proposed:**

Traffic: the issue of traffic was viewed as a major concern for all of the residents. They voiced concern on two fronts namely volume of traffic and secondly health and safety concerns around the speed of the trucks and unsafe driving practices that would lead to the creation of a dangerous environment locally. These issues are addressed in the traffic section of the EIS.

Some residents present at all meetings had concerns about the width of the roadways and the absence of footpaths to the village of Kilmessan. It has been stated that these issues are predominantly the remit of the local authority and that Kilsaran International would have no power to make any amendments to the road, road layout or to develop footpaths on any carriageway that was run and maintained by the Local Authority / National Roads Authority.

Waste Acceptance Criteria: The issue of what waste would be brought into the site and how it would be managed was another large concern for local residents, again the waste acceptance criteria is dealt with later in this document. However the locals were told that the material would be predominantly soil and stone with a small volume of "Inert" construction and demolition material being required for the construction of haul roads into and out of the proposed phasing areas of the site. This figure is now calculated and will represent c.95,000 Tonnes in total over the 14 year

projected development phase of the proposal and this represents 0.66% of the total proposed intake volume for the facility.

#### Environmental Issues:

The residents brought up the key environmental issues and concerns that they have around dust, noise and groundwater issues. It is understandable that these issues arose as they would be at the forefront of thinking in all developments of this nature. The residents were assured that there was a very stringent environmental management plan in place throughout the operation of the quarry itself and that there were no recorded infringements for noise or dust during the quarrying and processing of the aggregate. This regime would be carried on through the operation of the Waste Licence which would be in force should the licence be granted by the Agency.

#### **B: Issues around the proposed Amenity Park:**

The Amenity Park: There were a lot of concerns raised from the local people about the amenity park itself. Firstly the proposed drawing as presented on the night of the open meeting 25/10/2016 showed that the carpark for the amenity park was located to the west of the park and therefore located proximate to the nearest residents. This was a cause for concern due to the possibility for the car park itself to attract undesirables whose presence would be potentially located proximate to the residents houses. The design team addressed this issue immediately by flipping over the drawing to ensure that the carpark was now located to the east of the proposed park at the furthest possible distance from the residents.

Security: There were also concerns raised over the security and safety of the locals with a public amenity park located adjacent to them. Details of the fencing arrangements were presented and also details of the proposed screening of the park from the locals was discussed

Ownership: The issue of who would own and or manage the amenity park was discussed by concerned residents. It was stated very clearly to the concerned residents that the park would only be built in the event that a local constituted body expressed interest in taking over the operation and management of the park. Kilsaran were endeavouring to do something good for the community in bequeathing the park to the local community but did not wish to have any future role in the operation or management of the facility. There would be a period of two years made available for a properly designated constituted local group to come forward to take on the park and if this did not materialise then Kilsaran would take back in charge the land and restore it in conjunction with the proposed restoration activities for the main quarry, or possibly put the area into forestry or something similar.

The residents had very logical concerns that the local body was a representative body from the entire community. Again this issue was heard by the management team and it was re-iterated that the park would only be developed for a fully constituted body who had the local community objectives as part of their overall mandate.

Failure of the site: Kilsaran have proposed to have a caveat installed in the handover agreement that the site will be managed correctly and in the event that it is not the Company will retain the right to take back the site and again restore it in line with the overall restoration project or out it into forestry or another alternative use as agreed with the Planning authority and the Environmental Protection Agency who will be responsible for licensing the facility. A number of meetings have taken place around the proposal for the development of the public amenity park however there is no indication as of yet as to whether there are any interested parties.

Failure of the Planning Permission: Kilsaran Concrete Management have gone to great lengths to stress at the public meetings that the alternative option for Kilsaran Concrete will be to re-activate the Quarrying process in the event that they are unsuccessful in this planning permission. Company management have explained to the local people that the current economic climate is improving and the building industry is in a period of resurgence therefore making the quarry a financially viable entity for the future and one that Kilsaran Concrete would have no option but to explore to realise value from their asset.

RME Environmental (the Author) has taken the view that the engagement with the local community and with the local community groups has been a very positive one. The design team has taken on board and attempted where possible and practicable to mitigate or alter the proposal to mitigate any potential problems. Kilsaran have given the names and number of their senior managers to the residents and to the local community groups and have afforded all parties the opportunity to consult at any stage in this process.

## 1.7 RELEVANT LEGISLATION

### 1.7.1 ENVIRONMENTAL LEGISLATION

As a member State of the EU, Ireland is required to transpose EU directives into Irish Law within specified periods of their enactment. The EIA process is covered by the EIA Directive (85/337/EEC), which has been amended three times, and more recently consolidated in the Directive 2011/92/EU. In particular, Annex I of the directive specifies projects requiring an EIA, whilst Annex II specifies those projects where the Member state decides on the thresholds in terms of project scale, as to whether an EIA is required. Prior to 2000, the rules in respect of EIA contained in the various EC directives were brought into force by the European Communities (EIA) Regulations 1989 and the EC (EIA) (Amendment) Regulations, 1999 and the Local Government (Planning & Development) Regulations 1999. These were largely consolidated within the terms of Part X of the Planning & Development 2000 Act, and Part 10 of, and Schedules 5, 6 and 7 of the 2001 Regulations.

Therefore, under Irish Law, proposed developments are required to comply with the Planning and Development Acts, 2000-2010 and related secondary legislation in the form of Statutory Instruments or Regulations. These pieces of legislation require an EIA to be conducted, typically by specialist consultants on behalf of the developer, before consent is given for projects likely to have significant effects on the environment by reason of their *size, nature or location*.

In respect of the Planning & Development Regulations S.I. No. 600 of 2001, Schedule 5, Part 1 specifies projects requiring an EIA (reflecting Annex I of the EIA Directive), and Schedule 5, Part 2 specifies those projects where the Member state decides on the thresholds in terms of project scale, as to whether an EIA is required (reflecting Annex II of the EIA Directive). Schedule 6 specifies information to be contained in an EIA, whilst Schedule 7 specifies the criteria used for determining Sub-Threshold projects that for reasons of location and characteristics of the development and related impacts, require an EIA.

### 1.7.2 Waste Legislation

The Waste Framework Directive 2008/98/EC, which repealed previous Waste Directives 75/439/EEC, 91/689/EEC and 2006/12/EC, establishes a legal framework for the treatment of waste within the EU, excepting certain waste categories, such as radioactive elements, waste water, animal by-products, etc. The Directive seeks to protect the environment and human health through the prevention of the harmful effects of waste generation, and through waste management. Article 13 requires Member States to take measures to ensure that waste is managed while safeguarding human health and the environment, and in particular:

- without risk to water, air or soil or to plants or animals
- without causing a nuisance through noise or odour
- without adversely affecting the countryside or places of special interest

In order to address the whole waste cycle, Member States are required to implement legislation in accordance with a hierarchy for the treatment of waste, set out in Article 4, which ranges from prevention, reuse, recycle, energy recovery to disposal. The Directive also addresses issues of waste management, permits and registration, and the establishment of national waste management plans. The management of waste in Irish Law is codified principally in the Waste Management (WM) Acts, 1996 and 2001, and Part 3 of the Protection of the Environment Act, 2003, which may be cited together as the Waste Management Acts, 1996, as amended. The European Communities (Waste Directive) Regulations, 2011 (S.I. 126 of 2011) represents the transposition of the Waste Framework Directive, 2008 into Irish Law, and amends these Acts. The 2011 Regulations apply the definition of 'waste' established in the 1996 WM Act as "any substance or object belonging to a category of waste specified in the First Schedule or for the time being included in the European Waste Catalogue (EWC) which the holder discards or intends or is required to discard, and anything which is discarded or otherwise dealt with as if it were waste shall be presumed to be waste until the contrary is proved".

The Waste Management Acts, as amended, require that any person, with few exceptions, carrying out the recovery or disposal of waste shall hold a waste license, a waste facility permit or a certificate of registration, depending on the nature and extent of the activity. This requirement for waste disposal and recovery activities to be authorised is provided for in Part V, Section 39 of the Waste Management Acts. Sub-section 39(1) states that all such activities require a waste licence,



except those classes of activities for which waste permit regulations have been provided under subsection 39(4). Sub-section 39(5) sets out that the waste permit regulations shall provide specifics on the quantities of waste that may be disposed or recovered under waste permits, and that waste permits or waste certificates, as opposed to waste licences, are obtained from the local authority, for privately operated waste facilities, or the Agency.

The Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. 821 of 2007), as amended (i.e., S.I. 86 of 2008), governs waste facility permits and certificates of registration. Schedule 3, Part I of the 2007 Regulations specifies the types of waste activities subject to a waste facility permit. Class 5 covers the recovery of excavation spoil, comprising natural materials (e.g., clay, gravel, etc.), and which constitutes inert waste, through deposition for the purposes of the improvement or development of land. This class of activity has a threshold of 100,000 tonnes for the total waste intake over the lifetime of the facility.

Where there are several classes of waste activities being undertaken within a facility, the quantity of waste for the purpose of the statutory thresholds refers to the total quantity of waste accepted at the facility (i.e., total of all classes of activity) and compared to the threshold for the principal class (EPA 2008). However, as the expected lifetime intake volume exceeds the 100,000 tonnes threshold for a Waste Permit, Kilsaran Concrete is required to apply for a Waste Management Licence.

## 1.8 EIA SCREENING

An EIA is a systematic process to identify and evaluate the environmental impact of proposed projects, developments and programmes, and is a key environmental policy instrument of the European Union (EU). The process requires proposed developments likely to have a significant impact on the environment to gain consent from the competent authority prior to proceeding with the project.

In Irish Law, the principal Acts under which EIA's are regulated are the Planning & Development Acts, 2000-2010. The Act consolidates previous Planning Acts and much of the Environmental Impact Assessment Regulations, where the latter is covered in Part 10 of the Act. In addition, secondary legislation consisting of Statutory Instruments or Regulations, made under the Planning & Development Act are also applicable.

Screening is the initial phase of the EIA process, whereby the proposed project is evaluated to determine if an EIA is required. Projects requiring EIA are listed in Part 1 and 2 of Schedule 5 of the Planning and Development Regulations (PDR) 2001 (S.I. No. 600 of 2001) as amended. Part 1 lists projects for which an EIA is obligatory under European law (specified in Annex 1 of the EIA Directive 2011/92/EU). In contrast, Part 2 lists projects for which an EIA is required, based on criteria and/or thresholds determined by the Member State, Ireland in this case (reflecting Annex II of the EIA Directive 2011/92/EU).

Any development which is seeking a waste licence which has not previously been subject to an Environmental Impact Assessment (EIA) is screened by the EPA to determine whether a waste

licence application should be made subject to an EIA. During the EPA waste licensing process, the legislation relating to EIA was revised subject to European Union (Environmental Impact Assessment) (Waste) Regulations 2012 (S.I. No. 283 of 2012). In accordance with Section 40(2A) of the Waste Management Act 1996, as amended, and with regard to Section 42(11) of the Act, as amended, the Agency has, as part of its consideration of the waste licence application determined that the application should be made subject to an Environmental Impact Assessment (EIA) as regards the matters that come within the functions of the Agency.

The EPA have determined that the activity to which the licence application relates exceeds the threshold under Section 11(b) of Part 2, of Schedule 5 of the Planning and Development Regulations (PDR) 2001, namely "Installations for the disposal of waste with an annual intake greater than 25,000 tonnes not included in Part 1 of this Schedule."

## 1.9 SCOPING AND CONSULTATION

Scoping should ensure that the constituent environmental studies of the EIA provide all of the relevant information, particularly with respect to: (1) significant impacts of the project; and (2) alternatives to the project. As such, the scoping process identifies the issues that are likely to be important during the EIA and eliminates those that are not. The information can be compiled through a formal process, whereby the competent authority is asked to consult with relevant agencies to draw up an opinion about the scope of the coverage required. More informal scoping can also be carried out to ensure that all relevant issues are identified and addressed to an appropriate level of detail.

A scoping exercise has been carried out in order to identify the range of impacts that may be associated with the proposed development, the likely concerns of local residents and landowners, and to assess the information and detail that is required to be included within the EIS.

Consultation for the purpose of an EIA provides an opportunity to solicit expertise and advice from a wide range of organisations and interested parties. Consultation has also taken place with sub-consultants appointed to prepare studies on specialised subjects. These include geologists, ecologists, traffic and archaeological consultants. Consultations were held with professional staff from the Local Authority as part of the scoping process.

## 1.10 FORMAT OF THE EIS

The format and scope of this document has been produced having regard to:

- A. Schedule 6 and 7 of Planning & Development Regulation 2001 (S.I. No. 600 of 2001)
- B. Meath County Development Plan (2013-2019).
- C. Guidelines on the Information to be contained in Environmental Impact Statements, Environmental Protection Agency (EPA 2002).
- D. Advice Notes on Current Practice (in the preparation of Environmental Impact Statements) (EPA 2003).

- E. Waste Licensing: Application Guidance Notes for Waste Soils Recovery Facilities (EPA 2012a).
- F. Waste Licensing: Application Guidance Notes (EPA 2012b)

The EIS takes into account these and other Government and commonly accepted standards and guidelines that affect various aspects of the proposed development. In order to ensure transparency and public awareness of the environmental implications of development decisions, an EIS is required to contain a non-technical summary according to Article 94 of the PDR 2001 (S.I. No. 600 of 2001). Clause 94(C) specifies "a summary in non-technical language of the information" required to be contained in the EIS by the preceding clauses 94(a) and 94(b). Thus, the non-technical summary includes descriptions of the project, existing environment, impacts and mitigation measures, as well as graphic elements such as location map, site layout plan, etc. Furthermore, the non-technical summary is written in a format and language that can be understood by persons without the appropriate technical background. In accordance with the guidance, the non-technical summary is provided as a separate, self-contained document, and is available to the public for inspection or purchase at the Local Authority Planning Office Public desk.

### 1.11 OBJECTIVES OF THE ENVIRONMENTAL IMPACT STATEMENT

Formal environmental assessment enables the environmental effects which may be caused by a development to be systematically identified and evaluated. The EIS presents the results in a manner that enables the importance of the predicted effects, and the scope for modifying or mitigating these effects, to be properly evaluated by the relevant decision-making body prior to deciding with respect to development consent.

This EIS seeks to provide an objective analysis of the possible environmental effects resulting from the proposed development at Tullykane, Kilmessan, Co Meath. These effects are assessed against a comprehensive checklist of relevant environmental criteria. The EIS then systematically evaluates the positive and negative impacts of the project on both natural and human environments.

The overall aims of the Statement are:

- To provide relevant and complete environmental information to all project stakeholders, including the general public, in a self-contained and comprehensive document.
- To identify and provide objective analysis of the potential effects of the proposed development on the existing environment, so as to inform the competent authority and other interested parties in the decision-making process.
- To describe available measures to mitigate, either by avoidance, reduction or remediation, any environmental effects that may be identified.

- To assess the likely effectiveness of the mitigation measures, and the acceptability of residual effects.
- To provide a framework for the ongoing monitoring of residual environmental effects.

The EIS is intended to be a self-contained document which addresses all of the potential environmental issues which may arise as a result of the proposed development.

## 1.12 LAYOUT OF THE ENVIRONMENTAL IMPACT STATEMENT

The EIS has been prepared in accordance with 'Guidelines on the Information to be contained in Environmental Impact Statement' published by the Environment Protection Agency. The second reprint of these guidelines was published in 2002. The EIS also takes into account current practice in Environmental Assessment. In addition, the policies contained within the Meath County Development Plan (2013-2019) have been considered and taken into account.

The EIS has been prepared using the "Grouped Format Structure", where each topic is examined as a separate section referring to the existing environment, the proposed development, impacts and mitigation measures.

The Statement is sub-divided into three main sections:

**Section 1.0** sets out general introductory comments concerning the project and a brief explanation of the aims and format of the EIS. It also identifies the various consultees and professional consultants who have contributed to this EIS and any difficulties encountered in preparation of the EIS.

**Section 2.0** describes the details and nature of the proposed development and introduces some of the potential environmental effects which may result. It also explains the need for the proposed development, details any proposed or anticipated growth of the development and possible associated projects. Alternative project locations, designs and processes are also considered.

**Section 3.0** provides detailed information on all aspects of the existing environment, identifies potential impacts on the environment by the proposed development, and recommends mitigation measures to avoid, reduce or remedy these impacts. They are grouped under the following sub-sections:

- Human Beings
- Flora and Fauna
- Soils and Geology
- Water (Surface and Groundwater)
- Climate

- Air Quality
- Noise & Vibration
- Landscape
- Cultural Heritage
- Material Assets
- Traffic
- The Interaction of the Foregoing (This section is an examination of any interaction between impacts identified in the previous sub-sections).

The associated external consultants' reports are provided as an appendix to the EIS main document and should be used as a reference to the core text of the EIS.

### 1.13 PROJECT TEAM

Specialist	Specialist firm	Discipline	Topics in EIS
Dr Charles Mount	Byrne Mullins & Associates	Archeological Consultants	Archaeology Cultural Heritage
Julian Keenan	Trafficwise, Traffic and Transportation Solutions	Traffic & Transportation Consultants	Traffic & Transport
Kate-Marie O Connor	Scott Cawley	Ecological Consultants	Flora & Fauna
Michael Gill	Hydro Environmental	Geology / Hydrogeology	Soils / Hydro-Geology
Raphael Mc Evoy	RME Environmental	EIS compilation and Strategic planning	EIS compilation, Planning and development context
Sean Boyle	Sean Boyle Architects	Planning and Draughting Landscape impacts	Drawings and project coordination

### 1.14 ANY DIFFICULTIES ENCOUNTERED IN COMPILING SPECIFIC INFORMATION

No major difficulties arising from either deficiencies in technology, knowledge or expertise were encountered in the preparation of the EIS. The EIS has been prepared by consultants with considerable experience in the compilation of planning permission applications and the carrying out of Environmental Impact Assessments (EIA's) for waste management developments (Refer to Section 1.13).



## 1.15 REFERENCES

- 1 DOECLG (2010) *Planning and Development Acts 2000-2010*, Dept. of the Environment, Community and Local Government (DOECLG), Dublin, Ireland, [Available at Irish Statute Book, Office of the Attorney General <http://www.irishstatutebook.ie/home.html>]
- 2 DOECLG (2011) *Planning & Development Regulations 2001 - 2011*, Dept. of the Environment, Community and Local Government (DOECLG), Dublin, Ireland, [Available at Irish Statute Book, Office of the Attorney General <http://www.irishstatutebook.ie/home.html>]
- 3 DOECLG (2001) *Planning & Development Regulation 2001 (S.I. No. 600 of 2001), as amended*, Dept. of the Environment, Community and Local Government (DOECLG), [Available at Irish Statute Book, Office of the Attorney General <http://www.irishstatutebook.ie/home.html>]
- 4 DOEHLG (2004) *Quarries and Ancillary Activities - Guidelines for Planning Authorities*, Dept. of the Environment, Heritage and Local Government (DOEHLG), Dublin, Ireland, [Available at <http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/>], 46 p.
- 5 DOECLG (1989 - 2006) *European Communities (Environmental Impact Assessment) Regulations, 1989 to 2006*, [Available at Irish Statute Book, Office of the Attorney General <http://www.irishstatutebook.ie/home.html>]
- 6 EPA (2002) *Guidelines on the information to be contained in Environmental Impact Statements*, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, [Available at <http://www.epa.ie/pubs/>] 33 p.
- 7 EPA (2003) *Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)*, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, [Available at <http://www.epa.ie/pubs/>] 140 p.
- 8 EPA (2006) *Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)*, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, [Available at <http://www.epa.ie/pubs/>] 28 p.
- 9 EPA (2008) *Guidance Manual: Waste Facility Permit and Registration Regulations*, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, [Available at <http://www.epa.ie/pubs/>] 372 p.
- 10 EPA (2012a) *Waste Licensing: Application Guidance Notes for Waste Soils Recovery Facilities*, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, [Available at <http://www.epa.ie/pubs/>] 22 p.
- 11 EPA (2012b) *Waste Licensing: Application Guidance Notes*, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, [Available at <http://www.epa.ie/pubs/>] 31 p.

- 12 Meath County Council (2013) Meath County Development Plan (2013-2019), Meath County Council, Navan, Co. Meath, Ireland, [Available at <http://countydevelopmentplan.meath.ie/adoptedplan/>] Vols. 1-4

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## 2.0 DESCRIPTION OF THE DEVELOPMENT

### 2.1 ALTERNATIVES EXAMINED

Schedule No. 6 of the Planning and Development Regulation 2001 (reflecting Annex IV of Directive 97/11/EC) specifies the information to be contained in an EIS, and requires *"An outline of the main alternatives studied by the developer and an indication of the main reasons for his or her choice, taking into account the effects on the environment"*. Current guidelines and practice for the preparation of environmental impact statements recommend that alternative project locations, designs and processes be considered with regards to environmental effects.

The European (EIA) Directive 97/11/EC has raised the importance of a consideration of alternatives within the EIA Directive as a whole. The consideration of alternatives is mandatory under the provisions of Article 5 of the European (EIA) Directive 97/11/EC.

The study of alternatives within EIA is very wide ranging and the literature suggests that the following range of alternatives should normally be studied:

- Do Nothing
- locations or alignments;
- site layout and project design;
- Size and scale;

The following is a description of the above main alternatives studied by the developer and an indication of the reasons for his choice, taking into account the interconnections between the economic, social and environmental issues.

#### 2.1.1 Do Nothing

The consequences of not reinstating the quarry at Tullykane, Kilmessan, Co Meath would include:

- the loss of economic benefits to the applicant;
- the loss of valuable needed jobs in the area;
- the loss of an opportunity to provide a location for development sites to transfer inert or inactive materials *Typically: Largely water insoluble and non or very slowly biodegradable: e.g. sand, subsoil, concrete, bricks, mineral*
- The loss of potential to increase the food, agricultural or bio-energy crop production in the area which would contribute to the National need.
- The loss of an opportunity to restore the former sand and gravel quarry pit to its former status as an agricultural field and the consequential knock on to the visual amenity of the area.
- The loss of potential to further protect the groundwater resource by building back up the site and reducing the potential for groundwater contamination.
- A breach of the existing planning permission

- A resultant loss of a potentially significant public amenity through the proposal within this application to covert 4.6 hectares of the existing site into a state of the art pubic amenity park. The potential social consequences of the do nothing alternative could be very far reaching in the future history of Kilmessan Village.

There are what are considered to be temporary negatives to the carrying on of the development like potential noise, dust, air traffic issues etc. but these are temporary and with this proposal on this site and the willingness of the developer to make this commitment to the site the “Do Nothing” alternative could only be viewed as a wasted opportunity for the facility.

The failure to execute the current proposal would lead to the continuation of the extraction processes at the facility for a period up to 2031 with a further two years then allocated to the rehabilitation of the facility.

The permitted rehabilitation plan would be executed which involves the partial backfilling of the void and the flooding of the void and consequential creation of a lake. It is argued that the creation of productive agricultural land from the proposed process can be seen as a more constructive utilisation of resources.

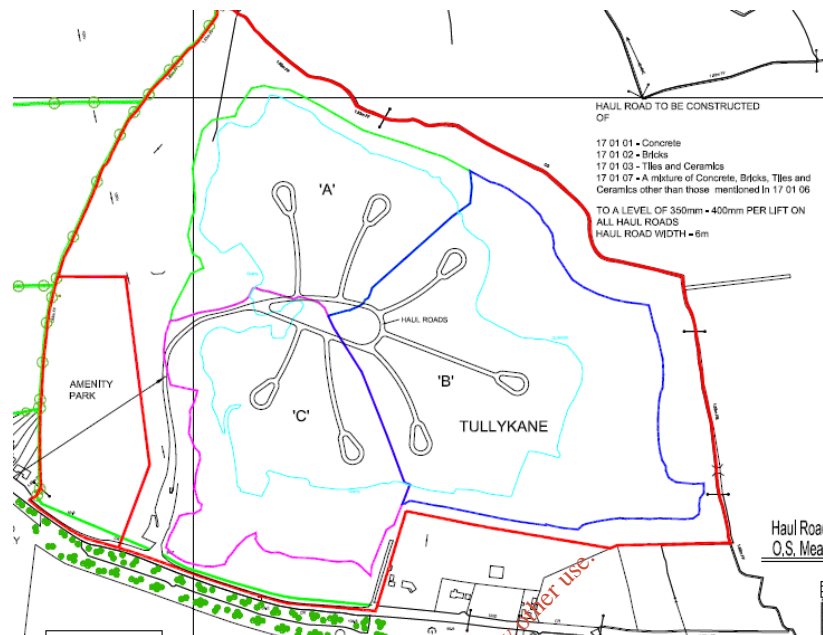
#### 2.1.2 Location

The site is well placed to serve local markets and the needs of local construction markets and those of neighbouring authorities. In particular those of the regional waste authority in which it stands. The site is currently not in use as a functioning quarry however the current planning permission Planning Permission TA802731 permits the continued extraction at the site until 2031. No alternative is applicable to the location as the proposed development in this case is very much site specific. No alternative locations have been assessed in this instance.

Alternative locations we indeed assessed for the siting of the public amenity park. Areas to the east and North of the site were considered. Road access and alternative access gate locations were considered also. The only possible route in was considered to be via the local Kilmessan – Dunsany L2206 road and various access points off that road were considered.

#### 2.1.3 Site Layout and Project Design

The site layout continues on from the existing extraction area and it is intended to restore the entire area of extraction to the original levels and land use. Therefore the site layout itself in reality will remain the same and stay exactly as it lies following the resource extraction. There are no possible alternatives to this. In respect of the project design, there are alternatives, for example, regarding the project phasing. A very specific and considered restoration programme has been designed. It has been decided to phase the restoration in a North to East to South direction which would mean effectively that the project commences further from the most sensitive receptors and moves in a clockwise direction with only 1 phase proximate to the nearest residences thus mitigating the cumulative nuisance potentially generated.



**Fig 2.1 Phasing Diagram and Haul Roads**

Various designs were considered for the development of the public amenity park. Car park locations, site security specifications, site screening options. All were considered in conjunction with suggestions from both the design team and also the local residents who had a significant input into the layout of the proposed amenity. Also considered was the option to bring the facility under the design regime of the backfilling and restoration proposals should the offer of the provision of the public park not be accepted.

#### 2.1.4 Size and Scale

The size and scale of the restoration project are predetermined but the design team has addressed alternatives in respect of both. Some key considerations in the decision making process were around:

- 1: The volume of materials acceptable at the site
- 2: whether to completely fill the pit back to a level consistent with the surroundings
- 3: deciding on the level of importation in consideration with the licensing requirements
- 4: assessing the volume for importation in line with all potential environmental aspects
- 5: assessing the scale in line with the previous planning permissions
- 6: qualitatively assessing the project in terms of overall economic deliveries
- 7: qualitatively assessing the residual value in bring the plot back to an agricultural field
- 8: qualitatively assessing the visual impact / improvement on the surrounding landscape
- 9: qualitatively assessing the impact on biodiversity and agricultural productivity



In general it was felt that there would be an economic incentive to fill the void completely if there was available material for the re-filling. A review of the Dublin market and the general trend locally around the construction and commercial climate meant that that decision was made. Also the general belief among the design team is that a figure of 400,000T per annum is attainable. It was felt that given the scale of the project it would demand an EPA waste licence and this was carefully considered and deemed to be a welcome route for the project given that the licensing criteria expected will not be vastly different from the current management criteria if maybe a little more frequent.

A lot of design alternatives were considered with reference to the size and scale of the proposed public amenity park. Alternatives suggested centred around longer walkways, greater ecological diversity, more playground and sensory park facilities. It is generally considered that given the local need for a community playing field and also the trend in walking and exercising being on the up that the current design offers something to a very wide range of the local community needs.

When all of the above considerations and alternatives were addressed it was felt that to fully restore the quarry was the most sustainable, visually pleasing, environmentally sound and economically justifiable methodology with which to proceed. Meeting with the statutory stakeholders namely Meath County Council Planning and Environmental Staff also led to the understanding that resource recovery facilities like that proposed are a scarce resource in County Meath and the Greater Dublin Region at present. Whilst a lot of alternatives were considered. The proposed methodology was deemed the most appropriate.

## 2.2 CHARACTERISTICS OF THE PROPOSED PROJECT

### 2.2.1 The Existing Site

#### 2.2.1.1 General Description of the Site and its Environs

The existing Kilmessan Quarry is located in Tullykane, Kilmessan, Co Meath. The area is rural in nature and there is a dispersed mix of single dwelling houses and farms. The site is accessed directly from Local Road L2206 which lies on the southern boundary of the site. The site is generally set within an agrarian landscape and is for the most part bounded by mature trees and hedgerow on all sides. The surrounding landscape features a gently undulating terrain marked by woodland and pastureland. The quarry is substantially screened from views from the adjoining road network. Local Road L2206 connects the villages of Kilmessan and Dunsany.

Approximately 1km northwest of the existing quarry access Local Road L2206 links to L2205 in Kilmessan. These roads principally accommodate local quarry traffic. Local Road L2206 connects to L2207 at Dunsany some 1.75km southeast of the existing site access. To the north the L2207 provides access via Belpers Cross to the R147 (Former N3 National Primary Road) which lies approximately 3.9km north of Dunsany. From the R147 traffic has access to the M3 Motorway at Junction 7 to the north and Junction 6 to the south near Dunshaughlin. Approximately 3km to the

south of Dunsany Local Road L2207 connects to the R154 between Batterjohn and Cross Keys.

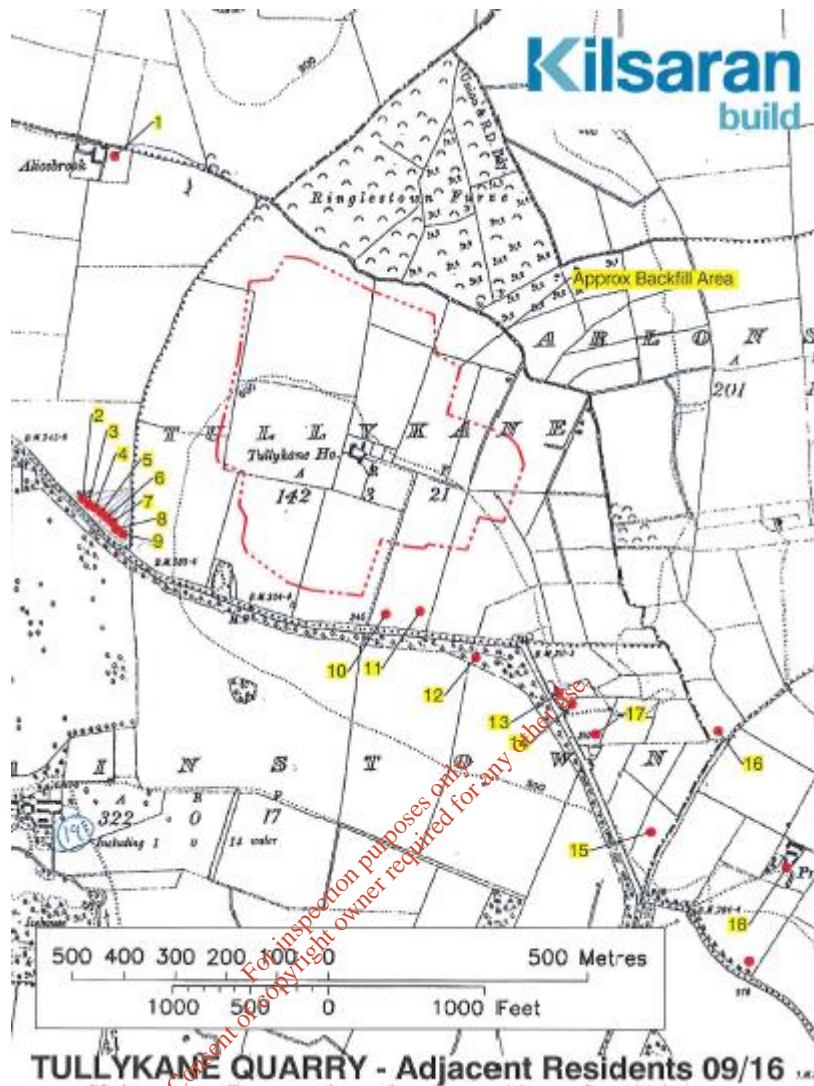
Under TA/802731 permission is granted for the extraction of stone at a rate of 750,000t per annum for the term of twenty years whilst a further two years is permitted for final restoration. The permitted hours of operation are 08:00-18:00hrs Monday to Friday and 08:00-14:00hrs on Saturdays. Truck loading activities are permitted to commence at 07:00hrs every day the site is open.

The site is located at an existing inactive rock quarry in Kilmessan, Co. Meath (Grid Reference: 689895, 756969). It is generally comprised of spoil and bare ground, recolonising bare ground, exposed rock, areas of hardstanding, dry meadows and grassy verges and artificial ponds. Calcareous groundwater-fed springs were identified within the subject lands located on top of the cliff faces within the northern section of the site. The site's environs are agricultural in nature with small residential dwellings scattered along minor roads nearby. The village of Kilmessan is located c. 1 km to the west of the site.

The proposed development site comprises the entirety of the quarry site, and the existing applicants land holding, which covers an area of c. 51.44ha. The western section of the quarry site (i.e., public amenity park proposed area) is scrub land not used in the quarry itself which is proposed for use in the development of the public amenity park. The existing Tullykane site is currently operated by Kilsaran Concrete as a limestone rock quarry (although the site operations have been suspended since 2012). The overall elevation of the application area varies from approximately 105m AOD in the southern part of the site to 85m AOD towards the western and north-western section of the site. The current floor level varies from 69mAOD to 75mAOD within the extraction floor area. The topographic nature of the surrounding lands is generally of moderate relief and gently undulating.

There are high earthen berms in place that run along the northern, eastern and southern boundaries of the site. The site entrance, weighbridge, offices and workshop are located on the southwest of the site. The existing quarry floor is below the local groundwater table and water (groundwater and surface water) is continuously being pumped from 2 no. separate sumps located on the quarry floor in order to maintain the extraction area dry.

The land-use in the area consists of a patchwork of agricultural fields that are designated as pasture and subordinate non-irrigated arable land, reflecting medium-high intensity agricultural. Outside of the immediate environs of the towns, the settlement pattern can be described as low-intensity rural settlement. Residential property in the area typically comprises one-off single residences and farmsteads along public roads or at the end of lanes off the latter. There are a number of houses proximate to the site pre-dominantly one-off house and directly to the west of the site there are eight cottages known locally as Swainestown cottages.



Based on the EPA soils map for the area comprises shallow, well drained, basic mineral soils (BminSW) which overlie much of the area outside the quarry footprint. Deep, well drained, mineral soils (BminDW) are more predominant in the wider area surrounding the site. Alluvium soils are mapped to the east and northeast of the site.

The mapped subsoils in the vicinity of the site are Limestone tills (TLS) which were laid down during the last glaciation. These are glacial tills derived from Carboniferous limestone and shale bedrock. The quarry footprint itself is absent of soils and subsoils as a result of rock extraction.

Based on the GSI ([www.gsi.ie](http://www.gsi.ie)) bedrock map for the area the quarry is located in the Loughshinny Formation which is a Dinantian upper impure limestone (more commonly referred to as Calp Limestone). Based on the GSI description the Loughshinny Formation comprises primarily impure limestones and limestones interbedded with calcareous shales (GSI, 1998). This sequence is exposed in the quarry face. The Carboniferous rocks of this region were deposited in a very complex manner with local variations whose lack of lateral continuity has resulted in many local stratigraphical units (GSI, 1998).

On a regional scale the proposed site is located with the River Boyne surface water catchment (Code: IE23\_02) within Hydrometric Area 07 of the Eastern River Basin District.

On a more local scale the proposed site is located in the Skane River surface water catchment. The Skane River flows in a north-westerly direction approximately 0.65km to the southwest of the site boundary. An unnamed stream (referred to as Stream S1), which is a tributary of the Skane River (with a surface water catchment area of 3.02 km<sup>2</sup>), flows along the northern boundary of the site in a north-westerly direction prior to merging with the Skane River approximately 500m downstream of Kilmessan Bridge.

The GSI ([www.gsi.ie](http://www.gsi.ie)) groundwater vulnerability rating for the site is Extreme X (*i.e.* rock is at or close to the surface) and Extreme E (*i.e.* subsoils are less than 3 metres thick). The site footprint itself is absent of all soils and subsoils and therefore the rating of Extreme X is applicable. Depths of subsoils encountered during monitoring well drilling in the landholding surround the quarry footprint were between 2.44m and 5.49m. Backfilling the site with inert material could be viewed as a good approach to increasing the vulnerability rating, *i.e.* provide better aquifer protection in the long term, and proper landscaping and closure of the site will also prevent fly tipping.

The Trim Groundwater Body (GWB: IE\_EA\_G\_002) in which the quarry is located is assigned 'Good Status' ([www.wfdireland.ie](http://www.wfdireland.ie)), this applies to both quantitative status and chemical status.

Kilmessan Public Supply Well (PWS) is located approximately 750m to the west of the quarry footprint boundary (and planning boundary). The abstraction rate of the PWS is approximately 330-370m<sup>3</sup>/day. In addition there are a number of third party wells which are currently used for domestic and agricultural water supply located in close proximity to the quarry. The majority of the local third party wells are located along the public road to the southwest and southeast of the proposed site.

Mitigation measures to alleviate any adverse impacts from the development on the environment have been incorporated into the design (Refer to Section 2 and Section 3 of the EIS) to ensure that the development can be operated within accepted standards for this type of development.

#### 2.2.1.2 Planning History

There is a long history of extraction at the proposed development site. Dr Charles Mount the project archaeologist has stated that quarrying activities have been ongoing in the Tullykane area for over 100 years. Kilsaran Concrete first applied for planning permission for the site in 1999 which was for the retention of the intensification of the quarry and they have made two subsequent planning permissions since then, TA/60605 and TA/802731

As it stands at present the extraction regime at the quarry is currently on hold due in major part to the economic issues faced nationally during the period 2007 to present. As part of the alternatives to the current proposal Kilsaran are assessing whether to restart the extraction operations at Tullykane

for the remaining period until December 12<sup>th</sup> 2031 when the current planning permission runs out. There will then, in line with the existing planning permission be a 2 year period of restoration of the quarry to a level prior to the creation of a lake as part of the finished remedial works.

This application reflects an alteration in the thinking of Kilsaran Concrete in relation to its overall asset holdings whereby the proposed work would provide and economically sustainable methodology to effect the restoration of the quarry and allow for the full recovery of the quarry back to its original state of agricultural land. Commensurate with that Kilsaran have recognised a local need for a public park and as a show of corporate social responsibility and gratitude to the local area the company are willing to gift conditionally a park and playing area to the local community.

The planning history for the proposed development site is documented in the table below.

<b>99/1230 – Meath Co Co Appeal No. PL17.119097</b>	The retention of intensification of a quarry development and associated processing on 46.5 ha including improvements to the existing quarry entrance with provision for new office, wheelwash and relocation of weighbridge <b>Granted following appeal 16/10/01 – 10 years permission</b>
<b>TA/60605 – Meath Co Co Appeal No. PL 17.22391</b>	Readymix concrete and concrete block batching plants, storage building, ESB switch house, ground storage bays, retention of ESB Substation and all associated works: Retention of ESB Substation - Granted Permission for development - Refused <b>11/05/2007 Split decision Grant</b>
<b>TA/802731 – Meath Co Co Appeal No. PL17.233813</b>	the continuation of a quarry development (including associated plant & buildings) previously granted under planning reg ref no 99/1230, including extraction by a further two benches within the previously approved extraction footprint area for a new permission term of 22 years (20 years extraction and 2 years to implement final restoration) on a 46 hectares. The base of excavation will be at 37.1m above ordnance datum). Permission is also being sought for a new Readymix Concrete Batching Facility to be located on the existing quarry floor, comprising - batching house (max height 15.38m) 10 overground aggregate storage bins (max height 14.0m) 3 cement silos (max height 15.47m) intake hopper and 2 conveyor belts, esb substation, 3 ground storage aggregate bays, bunded storage building, prefabricated office building, 6 bay water recycling installation, new septic tank and proprietary effluent treatment system (puraflo). In addition it is proposed to upgrade an existing septic tank by the addition of a second proprietary effluent treatment system (puraflo). An Environmental Impact Statement (EIS) has been prepared in respect of the planning application <b>23/12/2011 Conditional Grant – 2o years + 2 for restoration</b>

## 2.2.2 The Proposed Development

### 2.2.2.1 Development Overview

In this current development it is proposed to backfill the existing quarry site with approximately 5.6 million tonnes of inert soil and stone and also incorporating a small percentage of inert construction and demolition material for the construction of haul roads to access the proposed development. The proposed development also makes provision for the construction of a new public amenity park to be gifted to the local community of Kilmessan.

It is expected that the development will have a duration of 4 years and an estimated quantity of 400,000 tonnes of material will be required annually to successfully remediate the existing void space. As the economic recovery continues the demand for recovery facilities of this nature has risen exponentially and the target feedstocks for the facility will be readily available from County Meath and also the surrounding greater Dublin area. It is expected also that there will be a requirement for the recovery of approximately 95,000 T of inert construction and demolition material for the construction of internal haul roads. This represents just over 1.6% of the total proposed intake to the quarry. It is anticipated however also that end-of-life designations for certain construction materials may make them available to the facility for recovery of further volumes, via the conversion of their designations from waste categorisations to product categorisations. This volume is not however considered to exceed 5% of the overall projected material intake. It is anticipated that all redundant sheds, buildings and outhouses on site will be decommissioned and removed off site and all existing plant and equipment will also be removed.

Kilsaran Concrete anticipate employing five full time staff at the proposed facility including site management and general operatives on the quarry floor. Drivers for a bulldozer, excavator and a vibrating roller will be required. Overall site activities including planning permission requirements and EPA licencing requirements will be overseen by the site manager who will be assisted by a weighbridge operator / site administrator.

It will be the responsibility of the site manager to ensure the integrity of the works and the integrity and source of the material being brought to the site. Specific waste acceptance criteria will support the manager in this function. It will be his/her responsibility to identify and quarantine any inappropriate material brought to site and have it removed to an appropriately licensed facility.

Mitigation measures to alleviate any adverse impacts from the facility on the environment have been incorporated into the design to ensure that the facility can be operated within the accepted standards for this type of development.

#### 2.2.2.2 Duration of the Development

As discussed in the alternatives section the operating site at present has planning permission to continue extraction operations until 2031, an additional 14 year. This is an economically viable proposition now. Kilsaran Concrete however have made a commercial decision to bring forward the restoration of the quarry to take advantage of the economic climate prevailing surrounding the



recovery and reuse of waste inert soils and stone (170504). The prevailing climate also ensures that whilst the material is available Kilsaran Concrete will be afforded the opportunity to effect the restoration of the quarry in an economically viable manner. This will ensure an effective project delivery and potentially a better outcome for the project. In the event that the soils and stone availability was not there it would be more challenging to source materials.

It is therefore considered that the proposed duration of the plan will be for 14 years from the date of commencement. Consideration should be given in the planning permission to the date of commencement principal as the applicant will only be allowed to commence the operation upon successfully obtaining a waste licence from the Environmental Protection Agency and whilst the Agency currently are prioritising these developments due to a lack of resources nationally, the licensing timeframe could be as much as 2 years.

The duration of the project to provide a public amenity park for the local community is seen as a lifetime project which will be initiated by Kilsaran Concrete but will be operated by a local constituted organisation which has as its mandate a charter for local development and improvement. In the event that such a local constituted body does not come forward within 2 years of a successful planning permission grant from Meath County Council, Kilsaran Concrete will rescind the offer of the park and commence provisions to reintegrate the designated 4.5 ha of land into the overall restoration programme for the facility. This reintegration will form part of the 14 year backfill programme.

#### 2.2.2.3 Government Policy and planning and Development Context

The unsustainable levels of resource utilisation and waste generation within the EU have made waste management a central issue for policy makers in the EU (EPA 2012b). Consequently, the EU passed the Waste Framework Directive in 2008. One of the main objectives of the Directive is to provide a framework to transform Europe into a society with high levels of recycling and resource efficiency. The Waste Framework Directive 2008/98/EC established a legal framework for the treatment of waste within the EU, through the prevention of the harmful effects of waste generation, and through waste management. In order to effect this transformation, Member States are required to implement legislation in accordance with a hierarchy for the treatment of waste. Whilst EU legislation has been a primary driver of change in Ireland's posture with respect to waste management, the landfill levy introduced in 2002 was another key driver of change. These measures are driving the options for post-consumption management further up the waste hierarchy, away from reliance on disposal in landfill, and towards more sustainable behaviours (EPA 2012b). Of particular importance is Article 11.2 of the Directive, which states that "Member States shall take the necessary measures designed to achieve that by 2020 a minimum of 70% (by weight) of non-hazardous construction and demolition waste excluding naturally occurring material defined in category 17 05 04 in the List of Wastes shall be prepared for re-use, recycled or undergo other material recovery (including backfilling operations using waste to substitute other materials)".

#### 2.2.2.3.1 The National Spatial Strategy

The National Spatial Strategy (NSS) was launched by the government in late 2002 and is designed to provide a framework for balanced social, economic and physical development between the regions for the next 20 years (DOELG 2002). The strategy is based on a hierarchy of settlement; Gateways, Hubs and County Towns along with the need to support the role of smaller towns, villages and diverse rural economies.

The NSS provides a framework to promote and balanced regional development and sustainable growth. It also guides policies, programmes and investment. The strategy emphasises continued strong growth in the Greater Dublin Area (GDA), but with significant improvement in the regions outside the capital and more particularly in the nine gateway cities and nine hub towns. Meath has neither a gateway nor hub town and as such will have to compete with higher order cities and towns to secure funding for strategic investment opportunities. Navan is a primary economic growth town with the secondary economic growth towns of Kells and Trim.

Meath occupies a strategic location in the Greater Dublin Area (GDA) and benefits from a wealth of natural resources. As a constituent of the GDA, it is part of the largest market in the country and at the centre of Ireland's primary economic hub. The transport infrastructure in the County provides easy access to Dublin Airport and Port. Meanwhile the presence in Meath of a large number of national roads facilitates access to the remainder of the country. Meath also benefits from a strategic location along the M1 Dublin-Belfast international corridor, the primary economic corridor in Ireland.

The NSS recognises that quality of life is increasingly important to people and that unbalanced development affects quality of life. The growing trend of long distance commuting, and the dislocation between centres of employment and residential development are economically, socially and environmentally unsustainable. The NSS recognises that the solution lies in balanced regional development, whereby the potential of each area to contribute to the economic, social and environmental wellbeing of the State is developed. Ireland's growing population can be accommodated within existing settlements, by renewing and developing our cities, towns and villages, and ensuring that urban land is used sensitively and efficiently in order to provide attractive, sustainable, compact, public transport friendly forms, whilst avoiding urban sprawl.

#### 2.2.2.3.2 The National Development Plan 2007-2013

The National Development Plan 2007-2013 sets out a detailed development strategy for the country supported by a multi-annual investment commitment in the key areas of infrastructural development, education and training, the productive sector and the promotion of social inclusion (Dot 2004). The Plan also contains a commitment and accompanying framework for the promotion of more balanced regional development.

The Government committed itself in its Programme for Government to review progress on deficit reduction in order to achieve the objective of reaching the 3% of GDP deficit target by 2015. The Department of Finance carried out a review of Infrastructure Investment Priorities for 2010-2016.

The review represents a reappraisal of the Government's Public Capital Programme, designed to re-focus investment plans and ready the Irish economy for a return to growth. Investment in economic infrastructure is a key element in the promotion of competitiveness and the generation of sustainable economic growth and employment. It also contributes to regional development and assists environmental sustainability.

The Government has through the National Development Plan and the National Spatial Strategy made clear its objective to facilitate more balanced social and economic growth throughout the State. Such balanced regional growth will result in an increased requirement for social and economic infrastructure with a consequential increase in demand for recovery and re-use of inert Construction and Demolition waste.

#### 2.2.2.3.3 National Waste Policy

The waste policy statement entitled "Taking Stock and Moving Forward" published in April 2004 reiterates a commitment to the implementation of the internationally recognised waste management hierarchy. The integrated waste management approach is to implement maximum recycling, recovery of energy from residual waste and moving away from landfill disposal.

A policy direction WIR 04/05 was issued on 3rd May, 2005 in relation to the movement of waste. This was unforeseen in "Taking Stock and Moving Forward" and was intended to address concerns that relevant regulatory authorities were taking an unnecessarily restrictive approach in regard to the inter-regional movement of waste. This guidance is intended to provide greater clarity in regard to the appropriate application of the proximity principle so as to facilitate the provision of environmentally sustainable and economically viable waste infrastructure in accordance with national policy.

Section 21A. (1) of the amended Waste Management Acts 1996 to 2011 states that:-

The following waste hierarchy shall apply as a priority order in waste prevention and management legislation and policy:

- (a) Prevention;
- (b) Preparing for re-use;
- (c) Recycling;
- (d) Other recovery (including energy recovery); and
- (e) Disposal.

Measures at the top of the hierarchy have the inherent potential to be more environmentally beneficial and resource efficient. It implies that higher order strategies should be considered first and used where practicable.

Waste prevention is the top priority and when this has been exercised to its full potential then one should attempt to get the maximum benefit from the remaining waste at minimum environmental cost. This is the basis of the '3 Rs' which take account of the next steps in the hierarchy:

**Reduction (Minimisation)** is top of the list since it is the only complete way to reduce environmental impacts.

**Reuse** is generally better than recycling since there is no processing stage which would use energy and create its own waste.

**Recycling** is generally better than recovery of secondary materials or energy since it achieves a greater reduction in the demand for primary resources.

To increase the likelihood of applying the Reuse, Recycling, Recovery and Treatment strategies to the best potential it is usually important that the various components in the waste stream are segregated as much as possible so as to minimise contamination. This usually requires segregation at source and systems to prevent the mixing of different waste streams.

A new National Waste Management Policy was adopted in 2012, and the new Regional Waste Plans, due to be in place in 2014, are required to reflect this new National Policy (DoECLG 2012). A key objective of waste management plans is to “ensure self-sufficiency of waste management infrastructure within the State”. The Plan incorporates several key obligations imposed by the 2008 Waste Framework Directive:

- Application of the Waste Hierarchy as a priority in legislation and policy
- Recovery of waste where practicable, or disposal without risk to environment or human health
- Prohibition of the abandonment or uncontrolled disposal of waste
- Establishment of an integrated network of waste disposal installations and of installations for the recovery of mixed municipal waste - aiming for self-sufficiency
- A system of permits and registration for all those involved in collecting, disposing of, preparing for the recovery of, or recovering waste
- Cost of waste management borne by original waste producer, through adoption of the polluter pays principle

#### 2.2.2.3.4 Regional Planning Guidelines Greater Dublin Area

The National Spatial Strategy (NSS) for Ireland sets out the basis on which all areas of the country will have the opportunity to develop to their potential within a national spatial planning framework for the period up to 2020 (DoEHLG 2002). The Regional Authorities have been entrusted with the important responsibility of implementing the NSS at regional level.

The Planning and Development Act, 2000 conferred on the Regional Authorities the power to make Regional Planning Guidelines (RPGs) for their functional areas. The RPG, which also incorporate a socioeconomic development strategy, are intended to constitute a strategic planning framework for the period 2010-2022 for the development of each region and for interregional cooperation. The strategic policies and objectives set out in the RPG will form the backdrop for socio-economic

planning by national and regional agencies and will constitute the policy framework within which county, city, town and local area development plans will be made.

The Regional Planning Guidelines (RPGs) extend the implementation of the National Spatial Strategy (NSS) down to the regional and local levels, by linking national spatial policy with planning by local authorities. The Regional Planning Guidelines for the Greater Dublin Area combines two Regional Authority areas - the Dublin Regional Authority and the Mid-East Regional Authority. The Guidelines cover the Councils of Dun Laoghaire-Rathdown, Dublin City, Fingal and South Dublin in the Dublin Region and Kildare, Meath and Wicklow County Council areas in the Mid- East Region.

The Regional Planning Guidelines (RPG's) set out the planned direction for growth within the Greater Dublin Area up to 2022 by giving regional effect to national planning policy under the National Spatial Strategy (NSS).

The RPGs seek to deliver policies integrating land use, transport, economic growth and investment in utilities - water, broadband and energy so that the GDA can move towards becoming a sustainable high quality location for business, residents and visitors.

It is the strategic policy (PIP5) of the GDA to ensure, from environmental, business and public health needs, that waste management remains a priority for local authorities and waste management regions in continuing to invest in promoting and facilitating reuse and recycling by residential and commercial sources and that high standard options for treatment and final disposal of waste are available within the GDA.

The Waste management policy for the GDA needs to:

- Expand policies to promote and support source reduction and reuse, to reduce stresses on waste management infrastructure and to create better synergies between businesses and across sectors;
- Promote improvements to quality of recycling infrastructure to reduce costs;
- Continue to invest in increasing opportunities for recycling and safe disposal of waste;
- Development of opportunities, as outlined above, shall not compromise the integrity of ecologically sensitive areas, in particular infilling with inert materials which can give rise to fragmentation of habitats. A change in the regulations that effectively exempts landfilling once it achieves land reclamation would support this endeavour.

Preservation of the environment and conservation of diminishing natural resources are key principles inherent within the concept of sustainable development. The RPGs support the waste management hierarchy and increased and coordinated effort should be made in the areas of source reduction and re-use of waste across the industrial, commercial and residential sectors of the GDA.

Local Authorities should seek to anticipate burgeoning waste streams, identify opportunities to integrate facilities where appropriate and identify current or future opportunities for re-use of waste, for example, the re-use of secondary aggregates as physical infrastructure construction bases or the potential reuse of suitable soil material in amenity projects or landfill restoration.

Strategic recommendations for the GDA include:

- PIR39 The reuse of waste should be encouraged and reinforced through encouragement of business clustering across the GDA. Opportunities to facilitate source reduction, the reuse of wastes, by-products and associated energy throughout the GDA should be examined as part of economic policies. Development of these opportunities shall not compromise the integrity of ecologically sensitive areas, in particular infilling with inert materials which can result in loss and fragmentation of wetlands.
- PIR 40 Waste management facilities should be appropriately managed and monitored according to best practice to maximise efficiencies and to protect human health and the natural environment.

#### 2.2.2.3.5 Regional Waste Management Plan

##### Eastern-Midlands Region Waste Management Plan

As part of the review as to whether the proposed development is suitable in a regional and National context a review of the requirements of the regional waste management plan 2015 – 2021 was also carried out in respect of the development. The development falls within the Eastern-Midlands Region which incorporates an area stretching from Dublin to Offaly and as can be seen in the graphic below:



Section 16.4.4 of the plan deals specifically with the responsibilities of the local authorities with respect to the backfilling of inert waste material. The plan recognise that significant proportions of the existing and planned treatment capacities for the region for inert waste materials are made up by backfilling recovery operations. The plan accepts that in 2012 there was relatively low utilisation rates for sites throughout the region due to depressed economic activity in particular in the construction sector. "Activity in the sector is expected to increase over the plan period as economic recovery continues to build nationally".



#### 16.4.4 Recovery – Backfilling

Backfilling activities (of inert waste), which meet the recovery definition and are in compliance with Articles 4 and 13 of the WFD, sit on the other recovery tier of the waste hierarchy. Local authorities in the region authorise such activities through the award of WFPs and CoRs. Similarly the EPA authorises significant backfilling of inert waste at large sites such as old quarries for restoration purposes.

Backfilling activities make up a significant treatment capacity in the region at present. Local authority authorised sites have a capacity of 0.9 million tonnes, with significant pending capacity for facilities at waste licence application stage. Local authority authorised sites generally have a shorter lifespan than EPA licensed sites and operations can often cease at these sites within the life of the permit, i.e. five years. EPA authorisations cover more substantial operations with a longer lifetime capacity. Utilisation of active local authority capacity at backfilling/land improvement sites was 48% in 2012. This relatively low level of utilisation reflects the depressed activity in the construction sector in Ireland and, as a result, supply of capacity exceeding current demand. Activity in the sector is expected to increase over the plan period as economic recovery continues to build nationally.

The proposed development will arrive at the correct time to support the afore mentioned economic recovery and as was mentioned earlier in section 1.6.1 the economic recovery will not proceed effectively and sustainably if backfilling operations remain at the current low level of operation. More developments like this one are certainly required regionally. The regional waste management policies in this regard require cooperation and coordination with and between local authorities, the regional waste management authorities and the Environmental Protection Agency in respect of the development and the operations of the facilities regionally.

##### Policies:

- E13. Future authorisations by the local authorities, the EPA and An Bord Pleanála must take account of the scale and availability of existing back filling capacity.
- E14. The local authorities will co-ordinate the future authorisations of backfilling sites in the region to ensure balanced development serves local and regional needs with a preference for large restoration sites ahead of smaller scale sites with shorter life spans. All proposed sites for backfilling activities must comply with environmental protection criteria set out in the plan.

In the face of increased demand for backfilling authorisations there is a need for better coordination between local authorities in the region. This is to ensure facilities are planned and developed at suitable sites and do not present a risk to European designated sites and existing biodiversity and habitats. It is recommended that the lead authority liaise with relevant stakeholders (including the EPA and the DAHG) to ensure appropriate measures are in place for the control and spread of invasive alien species at backfilling sites in the region where necessary.

The waste management plan recognises the need for the proposed development and the need for a greater level of coordination within the region itself to ensure that the regions specific demands are met adequately.

This EIS will demonstrate that the works proposed for Tullykane, Kilmessan are in line with the objectives of the Regional Waste Management plan through the demonstration of regional need, through the development of the facility directly through the responsible regulatory mechanisms i.e. via planning permissions with the Local Authority and a waste management (Operating Licence) via the Environmental Protection Agency.

#### 2.2.2.3.6 Guidelines

The Dept. of the Environment, Heritage & Local Government has published “Quarries & Ancillary Activities – Guidelines for Planning Authorities” in April 2004 (DoEHLG 2004b).

In this publication it is stated that as part of best practice.

- the availability of a choice of raw aggregates and C&D waste-derived aggregates for the purposes of new construction would serve to limit the depletion of natural resources.
- Quarries should consider using inert C&D waste arisings, which do not have the potential to displace natural aggregates, for reinstatement and restoration purposes on the quarry site.

#### 2.2.2.3.7 Meath County Development Plan 2013 - 2019

The aim of the Meath County Development Plan 2013-2019 is to drive the evolution of the County and to establish a framework for the coordinated and sustainable economic, social, cultural and environmental development of County Meath.

The development plan vision statement is for “*Meath to be a county that fosters sustainability throughout its vibrant communities, dynamic economy and unique cultural and natural heritage*”.

The following policy statements in the Meath County Council Development Plan are considered relevant with respect to the Waste Recovery Facility at Tullykane, Kilmessan:

WM POL 1	To adopt the provisions of the waste management hierarchy and implement policy in relation to the county’s requirements under the current or any subsequent waste management plan. All prospective developments in the county will be expected to take account of the provisions of the regional waste management plan and adhere to the requirements of the Plan. Account shall also be taken of the proximity principle and the inter-regional movement of waste as provided for under appropriate Minister Directives from time to time.
WM POL 3	To seek the provision of quality cost effective waste infrastructure and services, which reflect and meet the needs of the community.
WM POL 4	To seek in the Council’s dealings with private companies that all waste shall be undertaken in compliance with the requirement of the EPA and relevant waste management legislation and policy.
WM POL 6	To encourage the development of waste infrastructure and associated developments in appropriate locations, as deemed necessary in accordance with the requirements of the Regional Waste Management Plan.
WM POL 7	To encourage the recycling of construction and demolition waste and the reuse of aggregate and other materials in future construction projects.

The following objectives in the Meath County Council Development Plan are considered relevant with respect to the Waste Recovery Facility at Tullykane Kilmessan:

WM OBJ 1	To facilitate the provision of appropriate waste recovery and disposal facilities in accordance with the principles set out in the appropriate Waste Management Plan applicable from time to time made in accordance with the Waste Management Act 1996
WM OBJ 7	To promote the implementation of Waste Management Activities in accordance with Best Practice and national policy.
WM OBJ 8	To facilitate the implementation of national legislation and national and regional waste management policy.
WM OBJ 13	To support the development of facilities to cater for commercial waste not provided for in kerbside collection systems such as WEEE, C&D type waste and hazardous materials in accordance with the requirements of the North East Waste Management Plan.
WM OBJ 17	To require developers to prepare construction and demolition waste management plans for new construction projects over certain thresholds which shall meet the relevant recycling / recovery targets for such waste in accordance with the national legislation and national and regional waste management policy.
WM OBJ 18	To seek to ensure cooperation with the relevant authorities that waste management facilities are appropriately managed and monitored according to best practice to maximise efficiencies and to protect human health and the natural environment.

The proposed development at Tullykane Kilmessan, will involve the recovery and reuse of inert soil and stone and a small proportion of inert C&D material and as such the recovery operations are recognised as being high up the waste management hierarchy. Clean uncontaminated soils are suitable for intake for restoration activities and clean concrete, brick and tile are permitted for the construction of haul roads and hardstanding within the proposed development to facilitate the construction of the development; namely the phasing of the restoration to completion to agricultural land. Legislatively and ethically the quarry must be restored to a pre-determined satisfactory closure and remediated position. In this instance the developer proposes to alter the existing plan which is to allow flood the quarry, develop a lake ecosystem and leave the quarry in that state, and develop a plan to take waste inert and soil from the local area and restore the quarry area in its entirety to productive agricultural grassland. Doing this will result in the provision of a resource recovery site which will for 14 years provide a sustainable outlet to the construction industry for the recovery reuse of extracted soil and stone.

#### Areas of Significance or Special Importance (Designated Areas)

The County Council identifies the following amenities and features within the area which warrant protection and preservation under the County Development Plan. In particular, it is the policy of the Council:

### *Cultural and Natural Assets*

Meath's wealth of built heritage makes it exceptional in Ireland. It includes the UNESCO World Heritage Site of Brú na Bóinne, the seat of the High Kings of Ireland at Tara, the passage tombs of Loughcrew, the largest Anglo- Norman castle in Europe at Trim, the historic towns of Navan, Trim and Kells, great country houses, demesne landscapes, and a significant industrial heritage of canals and mills. Meath's natural heritage includes scenic river valleys, rolling farmland, a network of mature hedgerows and diverse coastal habitats.

It is the strategic policy of Meath County Council:

CSA SP 1	To ensure that the unique cultural heritage of Meath is protected, conserved and sensitively integrated into the sustainable development of the county for the benefit of present and future generations
CSA SP 2	To ensure that features of Meath's natural heritage and green infrastructure that provide ecosystem services are protected; that biodiversity is conserved and where possible enhanced and that the character of landscapes are maintained and enriched and that tourist and recreational uses are facilitated in a sensitive manner.
CSA SP 3	To promote the understanding of County Meath's landscape in terms of its inherent and unique character and to recognise what elements should be preserved, conserved or enhanced.
CSA SP 4	To implement, in partnership with the County Meath Heritage Forum, relevant stakeholders and the community, the county Meath Heritage Plan and any revisions thereof.

### *Archaeological Heritage*

Meath County Council recognises the value and significance of the county's archaeological Heritage. It is the policy of Meath County Council:

CH POL 7	To ensure that development in the immediate vicinity of a recorded monument is sensitively sited and designed so that it does not significantly detract from the monument. Where upstanding remains exist, a visual impact assessment may be required.
CH POL 9	To inform and seek guidance from the National Museum of Ireland if an unrecorded archaeological object is discovered or the National Monuments Service of the Department of Arts, Heritage and the Gaeltacht in the case of the discovery of an unrecorded archaeological site in accordance with National Monuments legislation.

It is an objective of Meath County Council:

CH OBJ 7	To protect archaeological sites and monuments, underwater archaeology, and archaeological objects, which are listed in the Records of Monuments and Places and to seek their preservation in situ (or at a minimum, preservation by record) through the planning process.
CH OBJ 8	To seek to protect important archaeological landscapes from inappropriate development.

### *Architectural Heritage – Record of Protected Structures*

The Planning and Development Acts place an onus on owners and occupiers of Protected Structures to ensure that the structure, or any element of the structure which contributes to its special interest, is not endangered either through neglect, or by inappropriate works.

It is the policy of Meath County Council:

CH POL 10	To conserve and protect the architectural heritage of Meath
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It is an objective of Meath County Council:

CH OBJ 13	To protect all structures (or, where appropriate, parts of structures) within the county which are of special architectural, historical, archaeological, artistic, cultural, scientific, social, technical interest and which are included in the Record of Protected Structures. (MCDP Appendix 8)
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## Natural Heritage

### Biodiversity Action Plan

Meath County Council adopted its first Biodiversity Action Plan in April 2010 in accordance with the first National Biodiversity Plan. The plan provides a framework for the conservation of biodiversity and natural heritage at a local level.

It is the policy of Meath County Council:

NH POL 1	To protect, conserve and seek to enhance the county's biodiversity
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NH POL 2	To promote measures to protect biodiversity in the development management process by creating and improving habitats, where possible
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### European Sites (Natura 2000)

Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are being, or have been, designated to conserve habitats and species of European importance pursuant to the EU Habitats and Birds Directives. Such sites form part of an EU network of ecologically important sites known as Natura 2000.

Appropriate assessment was introduced by the EU Habitats Directive as a way of determining if a planned project is likely to have a significant effect on one of the Natura 2000 sites so far designated (i.e. the candidate SAC's and SPA's), or their conservation objectives.

### Natural Heritage Areas

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) are designated under the Wildlife (Amendment) Act (2000) and encompass nationally important semi-natural and natural habitats, landforms and geomorphological features. It is important that the conservation value of these areas be maintained as they contribute to the county's green infrastructure.

It is the policy of Meath County Council:

NH POL 5	To permit development on or adjacent to designated Special Area of Conservation, Special Protection Areas, National Heritage Areas or those proposed to be designated over the period of the plan, only where an assessment carried out to the satisfaction of Meath County Council in consultation with the National Parks and Wildlife Service, indicates that it will have no significant adverse effect on the integrity of the site.
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NH POL 6	To have regard to the views and guidance of the National Parks and Wildlife Service in respect of proposed development where there is a possibility that such development may have an impact on a designated European or National site or a site proposed for such designation
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It is an objective of Meath County Council:

NH OBJ 2	To ensure an Appropriate Assessment in accordance with Article 6(3) and Article 6 (4) of the Habitats Directive and in accordance with the Department of Environment, Heritage and Local Government Appropriate Assessment of Plan and Projects in Ireland Guidance for Planning Authorities, 2009 and relevant EPA and European Commission Guidance documents, is carried out in respect of any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect on a Natura 2000 site (s), either individually or in combination with other plans or projects, in view of the sites conservation objectives.
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NH OBJ 3	To protect and conserve the conservation value of candidate Special Areas of Conservation, Special Protection Areas, National Heritage Areas and proposed Natural Heritage Areas as identified by the Minister for the Department of Arts, Heritage and the Gaeltacht and any other sites that may be proposed for designation during the lifetime of this plan
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In the case of the proposal for Tullykane, Kilmessan, case only the River Boyne and River Blackwater (Site Code 2299), a river and valley system of European interest, is the only one within 15km of the proposed project. Screening for Appropriate Assessment was carried out by Scott Cawley (Ecologists). The findings of the screening for Appropriate Assessment were that the activity, individually or in combination with other plans or projects is not likely to have a significant effect on the Natura 2000 network, or the conservation objectives of the sites. A Stage 2 Appropriate Assessment is therefore not required.

### Geological Heritage

Meath County Council recognises areas of conservation value, which include twenty eight geological sites.

It is the policy of Meath County Council:

NH POL 12	To have regard to the geological and geomorphological heritage values of County Geological Sites listed in Appendix 13 and avoid inappropriate development, through consultation with the Geological Survey of Ireland
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A search of the GSI Geological Heritage Database found that the site of the quarry and proposed development site is not located on any County Geological Sites, The impact of the development on the identified geological heritage of the site was assessed with reference to GSI consultation and to the "Geological Heritage Guidelines for the Extractive Industry" developed by the GSI and the Irish Concrete Federation (Refer to EIS Section Cultural Heritage).



## Landscape

The following development plan policies and objectives are considered relevant with respect to the landscape.

It is the strategic policy of Meath County Council:

LC SP 1	To Protect the landscape character, quality and local distinctiveness of County Meath in accordance with relevant government policy and guidelines and the recommendations included in Meath Landscape Character Assessment (2007) in Appendix 7
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It is the policy of Meath County Council:

LC POL 1	To support and implement the provision of the National Landscape Strategy
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LC POL 2	To require that any necessary assessments, including landscape and visual impact assessments, are provided when undertaking, authorising or approving development.
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It is an objective of Meath County Council:

LC OBJ 1	To seek to ensure the preservation of the uniqueness of all landscape character types and to maintain the visual integrity of areas of exceptional value and high sensitivity
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LC OBJ 2	To assess development proposals having regard to the recommendations contained in the Meath Landscape Character Assessment 2007.
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LC OBJ 3	To work in partnership with key stakeholders to promote County Meath as a centre for cultural heritage education and learning
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## Views and Prospects

County Meath contains many vantage points from which views and prospects of great natural beauty may be enjoyed.

It is an objective of Meath County Council:

LC OBJ 5	To preserve the views and prospects and the amenity of places and features of natural beauty or interest listed in Appendix 12 and shown on Map 9.5.1 from development that would interfere with the character and visual amenity of the landscape.
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## Rural Development

Part 10 of the Meath CDP sets out the rural settlement strategy that will be applied by Meath County Council to ensure the continued vitality and viability of the rural area. The Council's goal in terms of Rural Development is "to encourage the continued sustainable development of rural communities without compromising the physical, environmental, and natural and heritage resources of the County". In section 10.12, the Council acknowledges the need for extractive industries, but also notes that the industry can cause detrimental environmental and residential amenity effects including traffic generation, vibration, dust, noise, water pollution, visual intrusion and loss of ground water supplies. The goal in respect of extractive industries and building materials production is:

*To facilitate adequate supplies of aggregate resources to meet the future growth needs of the County and the wider region while addressing key environmental, traffic and social impacts and details of rehabilitation.*

It is the strategic objective of Meath County Council:

RUR DEV SO 3	To identify and protect known or potential aggregate resources, where feasible, from development which would prejudice their sustainable future usage
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It is the policy of Meath County Council:

RD POL 22	To facilitate the exploitation of the county's natural resources and to exercise appropriate control over types of development taking place in areas containing proven deposits, whilst also ensuring that such developments are carried out in a manner which would not unduly impinge on the visual amenity or environmental quality in the area.
RD POL 23	To support the extractive industry where it would not unduly compromise the environmental quality of the County and where detailed rehabilitation proposals are provided
RD POL 24	To seek to ensure that the extraction of minerals and aggregates minimise the detracton from visual quality of the landscape and do not adversely affect the environment or adjoining existing land uses.
RD POL 25	To ensure that the extractive industry and associated development minimises adverse impacts on the road network in the area and that the full cost of road improvements, including during operations and at time of closure which are necessary to facilitate those industries are borne by the industry itself.
RD POL 26	To ensure that all existing workings shall be rehabilitated to suitable land uses and that all future extraction activities will be allowed for the rehabilitation of pits and proper land use management. The biodiversity value of the site should be considered in the first instance when preparing restoration plans. Where landfilling is proposed, inert material is the preferred method. Each Planning application shall be considered on a case by case basis and where relevant, will be dealt with under the relevant regional waste management plan.
RD POL 27	To ensure that development or aggregates / mineral extraction processing and associated processes does not significantly impact in the following areas: (i) Existing & Proposed Special Areas of Conservation (SAC's) (ii) Special Protection Areas (iii) Natural Heritage Areas and Proposed Natural Heritage Areas (iv) Other areas of importance for the conservation of flora and fauna (v) Areas of significant archaeological potential (vi) In the vicinity of a recorded Monument (vii) Sensitive landscapes and; (viii) World Heritage Sites

#### *Extractive Industry and Building Materials*

Worked-out pits should be rehabilitated to suitable land uses and screened appropriately as part of an aftercare programme.

This EIS has identified the key strategy, policy, and objective determinations for Meath County Council for the period of the County Development plan. A key consideration for the conclusions

found in this document will be whether the proposal is coherent with the development criteria as set out by Meath County Council and as stated above.

It can be readily concluded from the above that the proposal to remediate the existing quarry fits with European, National and County legislative and development plan goals for the proposed and existing activities. A review of the local area plan for the village of Kilmessan has specifically highlighted the fact that the town is lacking in adequate amenities for sports groups and children and simply in general. The offer by Kilsaran Concrete to gift the public amenity park to the locals is in line with the specific requirements of the local area and is supported by local government policy. It must also be stated that development planning in the area local to Kilmessan has made provision for the future continuation of the Clonee to Navan railway line where a stop has been provisioned for Kilmessan. This will encourage further local development and in the future will see a rise in the commuter belt population in the area. This increased population will need local amenities in their area to sustain healthy normal living standards.

### 2.3 Construction

The nature of this development is the backfilling of an existing limestone aggregate quarry which currently exists as a void approximately 26 ha in surface area and 18m in depth to pit floor. The current proposal will aim to backfill this using inert soil and stone (EWC Code 170504) and also a small proportion of inert C&D Material which will be used exclusively for the construction of haul roads and local hard standing. (EWC Codes 170101, 170102, 170103 and 170107).

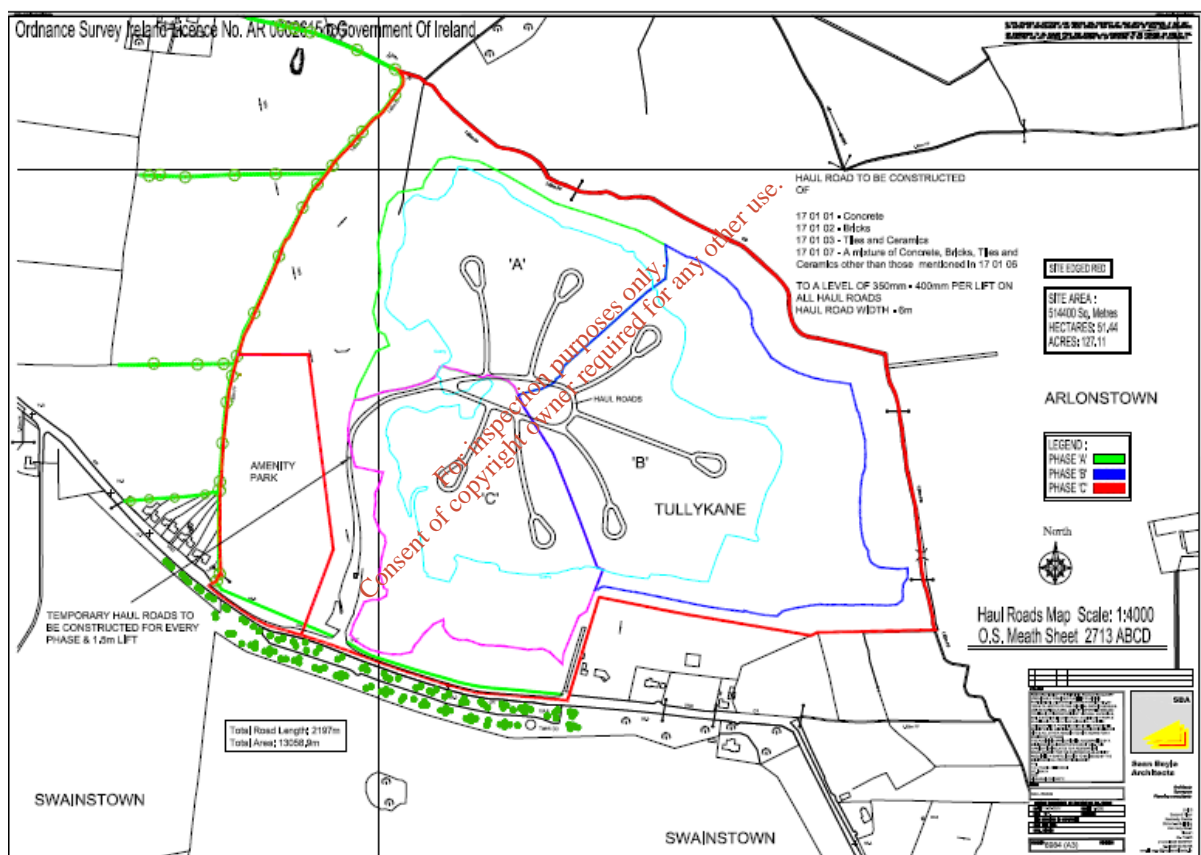
No physical construction needs to take place at the proposed development site. It is ready to commence the backfill of phase "A" immediately. Cognisance must be given however to the construction design plan as it is designed specifically to bring the backfill up in phases which will not create steep embankments with possible slope stability issues. The plan is to gradually raise up the level of the pit uniformly in 1.5 meter lifts of which there will be approximately 12 lifts over the duration of the 14 years as proposed for the project.

From a construction phasing point of view there are a number of sequential items which must be carried out however:

- 1: A full decommissioning and removal of the existing plant and equipment exiting on site must be carried out prior to or at the same time as the commencement of the backfilling operations.
- 2: A full decommissioning of the existing on site substations must be agreed with the ESB.
- 3: A management programme must be in place for the construction and elevation of any pumps and sumps for the management of ground and surface water to bring them along with the uplift of the base level of the quarry.
4. All existing site investigation locations within the quarry floor will be grouted and backfilled. The two main fracture zones on the existing pit floor will be covered with low permeability till.
- 5: A detailed construction design methodology must be established prior to the intake of material to ensure that all onsite management are familiar with the design goals of the development.

At present the construction methodology will involve the following sequences:

- 1: Backfilling to commence at Phase A then to B then to C and brought to 1.5m level after compaction in each phase and the sequence repeated. There will be approximately 12 lifts in total to bring the backfill back close to the proposed finished ground level.
- 2: The final lift of the development will require as a minimum 300mm of finishing topsoil to cap off the backfill.
- 3: The capped off layer will then be reseeded and brought back to grazing land.



### Construction of the Public Amenity Park

The proposed public park will be gifted to a constituted eligible local organisation should one present to take up the offer. In the event that this occurs Kilsaran Concrete will no later than end of year 2 of the proposed backfilling project commence the construction of the park. A detailed construction management plan or the park will be submitted in advance of the commencement of the proposal however the sequences will be broadly as follows:

- 1: Levelling off of the proposed public amenity park area
- 2: Delineation of the boundaries of the park via fencing etc. as proposed in this application. Securing of the site access.
- 3: Construction of the laneways, paved areas, carparks, landscaping and the playing pitch itself
- 4: Fit out of the sensory parks and Playgrounds
- 5: Handover of the park to the constituted body.

Note: It must be noted that should the proposal for the public amenity park not be accepted it is the intention of Kilsaran Concrete to integrate the landscaping and finish of the existing proposed area into the current restoration programme whereby the land will be converted to agricultural use in line with the current proposed development.

## 2.4 Description of the Proposed Operations

### 2.4.1 Management of the Facility

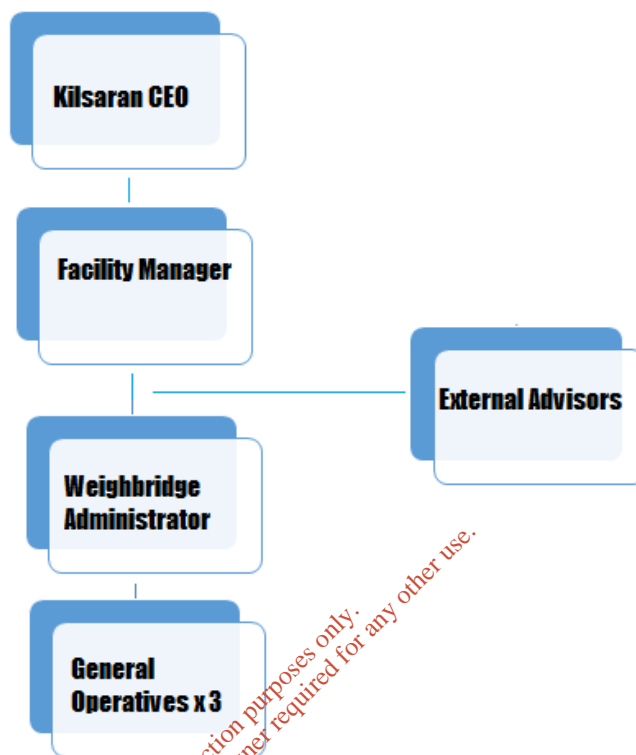
#### 2.4.1.1 Technical Competence and Site Management

Kilsaran Concrete (The Applicant) owns and operates in excess of 20 quarries and manufacturing and production facilities throughout the Country and has demonstrated a pedigree in doing so with a very high level of competency and diligence in all aspects of their operations for over 50 years. The in-house management team has amassed many years of experience in this excavation and backfill of working quarries and are ultimately competent to carry out this operation.

It must be stated that this restoration would be a first in its scale for Kilsaran Concrete and therefore some expertise would be acquired in relation the management of the Waste Licence and its requirement therein. External expertise will be required in this instance in relation to the overseeing and management of the surface water and groundwater pumping regimes and well and sump constructions. The same will be true for the management of some rare plant species which will need to be relocated within the site in accordance with the finding of the ecological report as conducted by Scott Cawley. The Company will seek external advice as and when required in relation to the operation of the proposed facility.

The Company and their management have also gained some experience through the operation of a soil recovery facility on a smaller scale in co Kildare.

The proposed organisational structure is shown by the following organogram.



#### 2.4.1.2 Environmental Management and Monitoring

Currently no formal Environmental Management System (EMS) has been developed for the existing Facility for the operation of the existing extraction operations. Kilsaran Concrete will in conjunction with the proposed Waste Licence implement an EMS for the facility subject to granting of said Waste Licence.

Kilsaran Concrete will ultimately be responsible for the 'Environmental Management' of the facility. The facility manager (to be appointed) will take operational responsibility for all onsite activities including the management of the facility and the management of the requirements of the operating licence. In this role, he / she will have responsibility to ensure that the proposed Environmental Management System, Environmental Objectives & Targets and the Environmental Monitoring Plan are fully implemented.

The EMS will include an 'Environmental Monitoring Programme' for the monitoring of water, dust and noise, and will be subject to compliance with any conditions attached to any decision to grant a Waste Licence for the facility. The monitoring programme results will be submitted to relevant regulatory authority on a regular basis, and therefore made available for inspection by interested parties. An Environmental management programme was in place in the quarry when operations were ongoing. A review of same would suggest the Company with their onsite and group based



environmental team would be well placed to oversee all environmental requirements for such a facility .

#### 2.4.1.3 Record Keeping

In compliance with requirements of any proposed EPA Waste Licence it is envisaged that as a minimum the following documents will be required to be maintained in the site office.

- The quantities and types of waste received at the site.
- The quantities and type of waste not accepted at the site, quarantined / segregated, and details of where these wastes were sent.
- The dates and times of all waste deliveries to the site.
- The names of the carriers, Collection Permit Numbers and the vehicle registration numbers.
- The origin of each delivery of waste.

Site records will be available for inspection by the Local Authority at all times and in conjunction with the requirements of the Waste Licence a public file including all significant environmental data for the facility will be available to members of the public during facility office opening hours.

All record keeping will be aligned to the requirements of the Waste Licence as issued by the Environmental Protection Agency contained, managed and revised regularly through the modicum of the Environmental Management System.

#### 2.4.1.4 Working Hours

##### WORKING HOURS & EMPLOYMENT

It is proposed that working hours at the application site will be that waste is accepted at the site between the hours of 08:00 hours to 18:00 hours on working days (Monday to Friday) and 08:00 hours to 14:00 hours on Saturday. These hours of operation are the same as those stipulated in the existing quarry planning permission. No operations will be carried out on Sundays or public holidays.

It is the intention of Kilsaran Concrete to employ a Facility Manager, a Weighbridge Operator / Administrator, and 3 General Operatives on a full time basis for the duration of the proposed development. The General Operatives will drive the loading shovel, vibrating roller and bulldozer and will be fully trained to inspect all incoming loads of material for suitability to tip at the facility. They will be responsible for making site management aware of any undesirable contents in any load and it will be the ultimately responsibility of the Facility Manager to quarantine and redirect these loads should they arise.

## 2.4.2 Site Infrastructure

### 2.4.2.1 Introduction

The facility's site infrastructure will be limited to an onsite office and weighbridge and sanitation facilities for the use of the staff and visitors to the facility. All of these are already in place. Provision of hard standing areas, quarantine material and residual waste is an additional requirement and will be sited to maximise operational efficiencies. The existing quarry plant including mobile crushing and screening plant will be decommissioned and removed off site as phase 1 of the construction process.

The proposal for the public amenity park will see the development of a carpark, nature walks with associated pathways, a sensory park and a sports field with all associated features.

### 2.4.2.2 Site Security

The site itself is accessed primarily off the local road L2206 towards the southern side of the site. The main site entrance is secured by a large constructed entrance gate with entrance walls and pillars and a large lockable gate. The section of the southern boundary of the site which runs parallel to the Kilmessan-Dunsany road is bounded by a natural hedge all the way around and the quarry itself is not visible from the road at all. At present the site is monitored by an online security contractor who monitor activity at the site remotely and make verbal challenges to possible intruders and initiate police call-outs in the event of non-compliance. The site is fenced completely around to a stock proof standard. It is the intention of Kilsaran Concrete to maintain a security presence on site in the closed hours and bank holidays for the duration of the proposed project.

In relation to the public park, it is proposed to erect palladine / pallisade type fencing around the entire perimeter of the park for security purposes. It is also proposed to screen out the neighbouring 8 houses via landscaping so that the backyards of the any of the neighbouring houses will not be visible from the park itself.

In the event that the park cannot be developed due to the lack of availability of a constituted body or organisation the area designated for the park will be blended into the proposed restoration scheme landscape plan and will be secured similarly to the main site.

### 2.4.2.3 Design for site roads

Access to the site will be via the main access gate off the L2206. This entrance has been designed with adequate set back distances and has been slayed adequately. The sightline design has not changed since the previous planning application and are deemed adequate by the traffic consultant "Trafficwise" of Clonee Co. Meath.

The road design for the proposed entrance to the public amenity park has been assessed by the traffic consultant "Trafficwise" of Clonee Co Meath and has been deemed adequate. This entrance

has been designed with adequate setback distances and has been adequately splayed. There are adequate sightlines in both directions upon exiting the proposed park.

All entrance Roads will be constructed with a tarmacadam surface at the entrance to both the recovery facility and the proposed park. All internal roads in the recovery facility will be constructed using imported waste construction and demolition material (170101, 170102, 170103 and 170107). An open design concept is available for the internal roads and pathways in the public park. This will be finalised prior to commencement of the development and can be agreed with the local authority in advance of commencement.

#### 2.4.2.4 Design of hardstanding areas

The only hardstanding area on site relates to the proposed quarantine areas on site. It is proposed to construct an interceptor proximate to the quarantine area to catch any potential run-off from contaminated material stored in the area. This design will be completed and agree with the Environmental Protection Area in advance of commencement of operations on site.

#### 2.4.2.5 Plant

A Bulldozer, loading shovel, vibrating roller and a road sweeper (occasional) will all be used on site. There is a weighbridge on site.

#### 2.4.2.6 Wheel wash

The site is serviced by an existing wheel wash unit situated at the entrance to the site. The wheel wash facility is constructed of a reinforced concrete type structure with access ramps which all trucks are required to pass through leaving the site.

Water supply is sourced from an on-site mains supply. Water level within the trough is controlled by a ball-cock device and overflow pipe. The wash-water is recycled through a system of containment tanks. The tanks will be periodically cleaned and the silt will be used within the restoration of the site.

#### 2.4.2.7 Laboratory Facilities

There will be no laboratory facilities on site. All laboratory analysis and testing will be conducted off site at a registered certified external laboratory.

#### 2.4.2.8 Fuel Storage and dispensing provisions on site

Fuel will be stored onsite for refuelling the onsite equipment. The fuel tanks will be bunded and stored within a specifically bunded area. A full procedure will be developed for refuelling and adequate training (anti-spillage) will be provided to all operatives as part of the environmental management system training provisions.

Spill kits and bunded storage trays will be available on site in the event that small volumes of oils, or fuel need to be stored temporarily and the spill kits will be available to quickly mop up and deal with any accidental spills. Any material sullied post-accidental spill will be disposed of in accordance with the required legislation by licensed contractor.

#### 2.4.2.9 Waste Quarantine Area

The site will have a designated area for the quarantine of any inappropriate materials which may be found within loads accepted at the site. A skip or suitable receptacle will be provided within the designated quarantine area for the temporary storage of any inappropriate materials discovered (e.g. glass, plastic, timber, steel, etc). The materials will be routinely removed by a licensed waste disposal contractor to an appropriate disposal facility.

#### 2.4.2.10 Waste inspection Area

All truck loads entering the site will be given a preliminary inspection on entering the site.

Secondary inspection is to be carried out after each load is tipped at the restoration infill area within the site. Should a load of material indicate contamination of non-inert material on inspection, the material will be reloaded and the driver instructed to remove the load offsite to an approved facility. If on occasion a load contains minor contaminants (e.g. plastics, rebar, wood and paper). These items will be removed on inspection by a site operative and stored in skips in a designated quarantine area pending removal offsite by a licensed waste disposal contractor to an appropriate disposal facility.

#### 2.4.2.11 Traffic Control

There will be car parking provision made for 5 employees and 3 visitor car parking spaces also. These will be located proximate to the weighbridge and site offices at the main entrance to the facility. In respect of the public park a carpark is proposed for the eastern side of the facility as per drawing.

Within both the restoration facility and the proposed public park as assessment at detailed stage post planning permission will be made to establish the requirement for traffic calming measures and adequate on-site safety signage. In particular regarding the operation of the restoration site a review of existing signage will be carried out to establish whether it remains fit for purpose and new signage / traffic control established if required. Consultation with Trafficwise, the traffic management consultants utilised for this job will be undertaken.

#### 2.4.2.12 Sewerage and Surface Drainage Infrastructure

A small onsite proprietary waste water treatment plant is operational onsite. This will need to be inspected and recommissioned by adequately qualified persons to determine its suitability to the required duty levels. It is not expected that any additional wastewater treatment facilities will be required.

There are no plans for any form of wastewater facilities at the proposed public Park.

Surface water drainage will be directed in the construction phase to the groundwater / surface water management system as described in section 3.4 Water of this document.

An adequate drainage system will be designed to allow for the management of surface water from the public park. In the construction phase of the development surface water will be drained to the quarry and this process will be picked up as the quarry restoration reaches levels consistent with that of the public amenity park drainage.

#### 2.4.2.13 All other Services

It is proposed to supply the site office, weighbridge and wheel wash with electricity from the ESB supply network.

Water to the site will be supplied via the Kilmessan public mains water supply.

#### 2.4.2.14 Plant Sheds and Equipment Compound

All oil barrels and lubricants will be stored on spill pallets/spill trays. No major vehicle servicing/repairs are carried out on site.

#### 2.4.2.15 Site Accommodation

The existing site portacabin and site office at the entrance to the facility will be used.

### 2.4.3 Facility Operation

#### 2.4.3.1 Unit operations

The attached Site Layout Plan indicates the location of all activities and identifies all buildings and facilities at the Recovery Facility.

The attached proposal for the public amenity park indicates the location of all activities and operational units within it. Please refer to Public Amenity Park drawing in attached drawings.

##### 2.4.3.1.1 Recovered Material intake acceptance and control

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 14:00hours on Saturday. No materials shall be accepted at any other time.

## 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. 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 from trucks at the active backfilling phase. It will be visually inspected at the weighbridge and then 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 tipped out 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.

In addition to the above, 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.

## Recovery Activities

It is envisaged that internal roads within the facility will be constructed from Materials arising from construction and demolition waste activities, typically stones, granular fill, concrete, blocks, bricks and ceramic tiles. Should any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) occur amongst the waste imported to site, it shall be separated out and temporarily stored in skips prior to removal off-site to appropriately licensed waste disposal or recovery facilities.

It will be a requirement of the proposed operation that all soils and stones (including construction and demolition waste for internal roads) forwarded to the site for recovery purposes has been pre-sorted at source, that it is inert and largely free of any non-hazardous / hazardous domestic, commercial or industrial wastes. Any consignments of construction and demolition waste which have such materials intermixed in them will be immediately rejected and removed off site.

Haulier Licensing Control



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.

As stated above, site management will ideally approve each site in advance and therefore all reception documents will reference the receiving site and haulier which will contribute greatly to traceability and accountability for all materials imported to site.

In conjunction with the requirements of relevant Health and Safety legislation all hauliers and contractors entering the site will have to be pre-approved via an on-site induction covering health and safety and environmental requirements for the site. This induction will be reviewed regularly to reflect the different requirements on site at the different phases of the development.

All drivers prior to accessing the site must also provide either personally or through their employers copies of their Health and Safety plan. A site specific method statement for the site, a copy of their public liability insurance for the file and a copy of their up to date safe passes and driver competency documentation.

#### 2.4.3.1.2 Phasing of Recovery Activities:

The nature of the proposed recovery and restoration of the facility at Tullykane, Kilmessan is that the operation will be carried out in 3 phases; Phase A, Phase B and Phase C. Please see attached phasing drawing I drawing section. The operation will involve the restoration of each phase in a sequential fashion starting at Phase A and then B and then C etc. then returning in the next lift to phase A again and repeated. Each lift will be 1.5m in depth and it is proposed to have 12 lifts in total to get from the existing quarry floor to the proposed finished level.

The proposal for the facility is to bring in 400,000 tonnes per annum to the site with a proposed total of 5.6 million tonnes to be brought in to fill the void space over the proposed 14 year lifespan of the project.

For the purpose of restoration to agricultural land the restored soil profile (capping) shall comprise 300mm topsoil over 1200-1350mm of subsoil. Good quality soil material for final capping will be placed in temporary storage areas. Topsoil and subsoil will be stockpiled separately to maintain the integrity of the soil. To ensure that damage to these materials is kept to a minimum, movement and placement of topsoil and subsoil for final restoration will only take place during appropriate weather conditions and when the soils are in the optimum condition. This optimum soil condition may be described as moist but friable. No soils will be moved when they are too dry or when there are unusually windy weather conditions. This will help to prevent erosion and any consequential creation of dust. Conversely, soils will not be handled in wet conditions or when the moisture content of the soils is too high. This will ensure that smearing of the soils does not take place and that the soil retains its structure. On completion of each phase of development final restoration including grading,

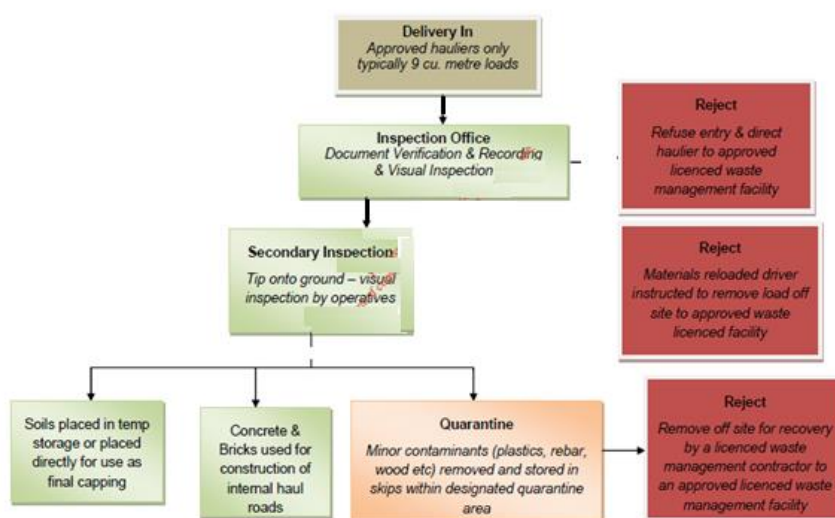
planting/seeding and landscaping will be carried out. Final restoration is dependent on the availability of good topsoil/subsoil and subject to suitable weather conditions. In order to allow for continuity of operations it is necessary to have a certain overlap between phases. The final contours and topography for the site is shown in the phasing contour drawing.

#### Discussion on use of C&D materials for the construction of haul roads

In light of the fact that aggregates have such a residual value, that they are a limited resource and that they are better served enabling the construction of infrastructure than for recovery purposes it is now common practice for Local Authorities, the EPA and other licensing bodies to approve the use of Inert C&D waste material for the construction of internal haul roads in facilities of this nature. All active restoration projects in the country at present employ this mechanism and it is in line with the requirements of the waste framework directive and all associated transposed Irish waste legislation.

In this instance the total length of the proposed haul route network within the restoration facility is designed at 2197m at a width of 6m. There are turning circles proposed in each phase. It is felt that a depth of 400mm of fill will be required for each part. This brings the total haul route construction for each lift to 5272.8 cubic metres. If we assume a specific mass of 1.5 Tonnes per cubic metre this will be 7909.2 tonnes per lift. There will be 12 phases therefore this will represent a total C&D material requirement of 94,910.4 tonnes. This volume represents 1.6 % of the total intake volume and this figure is in line with active restoration operations nationally.

The planning permission and waste licence application will also reflect on the current move by the EPA towards end of waste designation for specified recovered construction and demolition materials. This may make available reconstituted and recovered construction and demolition materials for use as haul roads in the facility which will not have any waste designation.



#### 2.4.3.1.3 Decommissioning

Redundant structures, plant equipment and stockpiles will be removed from site on cessation of activity. Plant and machinery will either be utilised by the operators on other sites, or be sold as working machinery or scrap. Any hard standing areas shall be broken up and the material incorporated into the final restoration scheme. The site access will be retained as agricultural access to the restored lands.

As part of the decommissioning process, all fuel and oil storage tanks will be removed from the site by a licensed waste contractor. The septic tank will also be removed from the site. Therefore there will be no potential for fuel, oil or sewage to cause long-term water pollution following cessation of extraction activities.

#### 2.4.4 Environmental Nuisance Control

##### 2.4.4.1 General

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, and the importation of small quantities of construction and demolition waste for internal road construction. The proposed environmental control measures are outlined in detail in the following sections.

The scale of the restoration proposals contained herein are such that the operations will be subject to licensing by the Environmental Protection Agency (EPA). The restoration works at the application site will ultimately be regulated by conditions attaching to any waste licence issued by the Environmental Protection Agency. Any additional control measures required by the Waste Licence, in addition to those outlined, will also be implemented.

##### 2.4.4.2 Bird Control

As the materials being placed at the application site are free of putrescible (food / kitchen) waste, site activities are unlikely to attract scavenging birds such as gulls and crows for the duration of the restoration works. Accordingly, it is not intended to implement any specific bird control measures at the site.

In the unlikely event that any putrescible waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

#### 2.4.4.3 Dust Control

In dry, windy weather conditions, the ongoing restoration activities may give rise to dust blows across, and possibly beyond the application site. In order to control dust emissions, the following measures will be implemented:-

(i) water from a tractor drawn bowser will be sprayed on dry exposed soil surfaces (including unpaved road surfaces) as and when required;

(ii) all HGV's exiting the site shall be routed through a wheel wash facility at the end of the paved internal access road. This measure will prevent transport of fines on both the paved access road and the public road network by HGVs exiting the site.

(iii) Stockpiling of imported soils will be minimised. Soils will ideally be placed and compacted in-situ immediately after being unloaded. If and when temporary stockpiling of soils is required, they will be placed as close as practicable to the centre of the application site, away from nearby residences. The amount of dust or fines carried onto the public road network will be further reduced by periodic sweeping of the paved internal access road and the existing local road in front of the application site.

#### 2.4.4.4 Litter Control

As the materials being placed at this site will be free of litter, the site restoration activities is unlikely to give rise to problems with windblown litter. Accordingly, it is not intended to implement any specific litter control measures at the site. In the unlikely event that any litter waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

#### 2.4.4.5 Odour Control

As the materials being placed at this site are not biodegradable and do not therefore emit odorous gases, the site restoration will not give rise to odour nuisance. Accordingly, it is not intended to implement any specific odour control measures at the site.

In the unlikely event that any biodegradable waste is identified among imported materials, it shall be immediately removed to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

#### 2.4.4.6 Vermin Control

As the materials being placed at this site are free of putrescible (food / kitchen) waste, site activities are unlikely to attract vermin (rats) for the duration of the restoration works. Accordingly, no specific vermin control measures shall be implemented at the site.

In the unlikely event that any putrescible waste is identified among imported materials, it shall be immediately transferred to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

#### 2.4.4.7 Fire Control

As the materials being placed at this site are free of flammable materials and biodegradable waste which could create a fire or explosion risk, site activities will not present a fire risk for the duration of the restoration works. Accordingly, no specific fire control measures shall be implemented at the site.

Notwithstanding this, the following operational practices will be implemented in order to prevent fires at the application site:

- (i) smoking at the application site and at the temporary site office will be prohibited
- (ii) any biodegradable or flammable waste included in materials imported to site shall be immediately transferred to the waste quarantine area pending removal off-site to a licensed waste disposal or recovery facility
- (iii) plant and equipment will be removed if they exhibit signs of overheating etc. In the unlikely event that a fire does occur, the local fire stations will be contacted and emergency response procedures will be implemented. Fire extinguishers (water and foam) will be provided at the site office to deal with any small outbreaks which may occur.

## 2.5 ENVIRONMENTAL MONITORING

There is an established programme of environmental monitoring at the application site which complies with requirements of the existing extractive operations planning permission and trade effluent discharge license as issued by Meath County Council. Emission limit values for environmental emissions arising from established activities are identified by the existing planning permission and trade effluent discharge license. It is expected that such limits will be set by the EPA should it decide to issue a waste licence in respect of the application site. Environmental sampling, monitoring and testing is largely and will be undertaken by site management or external consultants as required. Records of environmental monitoring and testing will be maintained on-site and will be forwarded to the EPA as required under the terms of the waste licence.

#### 2.5.2 Dust Monitoring

Dust emissions from established quarrying activities at the application site were measured using Berghoff dust gauges at 4 No. locations across the site. These gauges were located along the boundary of the application site, close to the nearest sensitive receptors, all of which are private

residential property. Please review Section 3.6 Air Quality of this report for any amendments to this. It is currently envisaged that the existing dust monitoring regime will remain in place for the duration of the site restoration works and will continue for a short aftercare period thereafter.

#### 2.5.3 Ecological Monitoring

Scott Cawley ecological consultants have been commissioned to assess the proposal and the potential impacts ecologically of same. It is advised therefore that reference is made to section 3.2 of this report to review any impacts and to establish any mitigating factors to be employed prior to, during and post the restoration phases.

#### 2.5.4 Groundwater Monitoring

A full array of borehole and groundwater monitoring assessment have been carried out on this site over the past 15 years. Please review the impact assessment as carried out by Hydro-Environmental Services from Waterford in respect of this proposal.

All groundwater sampling and testing as required by the licensing authority will be undertaken by external consultants on a licence required basis at groundwater monitoring wells installed within the application site. Groundwater levels will also be recorded.

#### 2.5.5 Landfill Gas Monitoring

In the absence of biodegradable waste amongst the inert materials used to backfill and restore the application site, no landfill gas can be generated and accordingly no provision has been made for landfill gas monitoring at this facility.

#### 2.5.6 Leachate Monitoring

In the absence of biodegradable waste amongst the inert materials used to backfill and restore the application site, no leachate can be generated and accordingly no provision has been made for leachate monitoring at this facility.

#### 2.5.7 Meteorological Monitoring

At the present time, no meteorological monitoring is undertaken at the application site. It is understood that temperature, rainfall, sunshine, wind speed and direction are recorded at a nearby synoptic weather station at Dublin airport, approximately 43km south/east of the application site. Other climatic data is recorded at the weather station at Casement Aerodrome, approximately 45 km southeast of the application site.



Upon successful receipt of the EPA waste licence it is envisaged that minimal meteorological monitoring will be recorded as part of the Environmental Management system governing the operations of the facility.

#### 2.5.8 Noise Monitoring

Noise emissions at the established extractive operations was carried out monthly at two locations. The proposed restoration activities will be monitored on a quarterly basis (i.e. three monthly) basis at 2 No. noise sensitive sites along the boundary of the application site, close to the nearest sensitive receptors, all of which are private residential property. Please see applicable noise and air quality chapters in section 3 for the proposed locations of the monitoring points.

It is currently envisaged that the proposed noise monitoring regime will remain in place for the duration of the site restoration works and will continue for a short aftercare period thereafter.

Noise monitoring will be undertaken using Type 1 (Class 1) sound level meters, microphones and calibrators that comply with the recognised national and international standards.

#### 2.5.9 Odour Monitoring

As the materials being placed at this site are not biodegradable and do not therefore emit odorous gases, the site restoration activities will not give rise to odour nuisance. Accordingly, no provision has been made for odour monitoring at this facility. Site staff will report and record any odour emissions at the site in the highly unlikely event that a complaint is made about odours emanating from the site.

#### 2.5.10 Surface Water Monitoring

At the present time, all surface water sampling and testing is undertaken as per the requirements of the existing Surface water Discharge Licence as issued by Meath County Council. Hydro-Environmental Services in their report on the surface water management of the proposed development have made recommendations as to how the surface water will be managed and It is envisaged that the EPA will require as a minimum a continuation of the existing monitoring and sampling regime, with increased visual assessment of surface water generation and characterisation of same. This will be agreed with the EPA and scheduled in the Waste licence. Recommendations regarding the management of the construction phase and the surface water management phase will be sought from Michael Gill Project consultant Hydro International.

## 2.6 Resource Use and Energy Efficiency

The only waste to be accepted at the facility for recovery comprises inert soils and stone, and inert construction and demolition waste. As such the material does not undergo any form of processing involving the use of chemicals or additives.

The potable water supply for the proposed temporary site office will be met by bottled water.

Water used for dust suppression, where possible, will be sourced from collection of surface water run-off and/or from an existing borehole on site. It should be noted that in Ireland rainfall occurs on a daily basis about 50% of the year. On days requiring dust suppression water usage would amount to 5 to 10 m<sup>3</sup> per day.

The only raw materials used on site are diesel, hydraulic oil and engine oil which will be used to operate diesel powered plant on site.

The only raw materials used on site are diesel, hydraulic oil and engine oil which will be used to operate diesel powered plant on site. As only a single bulldozer is used on site to place and grade the inert fill material and a semi-mobile crushing unit served by a loading shovel used to produce secondary aggregates the quantities of fuel oil used on site are relatively small.

Other plant and machine serving the sand and gravel pit includes a loading shovel, screening unit and on occasion a back-hoe excavator.

Electricity will be used on site to power the site office, on site lighting and security camera.

Energy requirements are low equivalent to a small domestic property.

Energy efficiencies will be achieved by using modern plant and equipment and servicing the equipment on a scheduled basis. Plant and equipment not in use will be shut off.

## 2.7 Waste Arisings

The applicant will endeavour to visit the construction sites to ensure materials are being properly sorted and segregated at source. The facility generates small volumes of office and canteen wastes which are stored in wheelie bins awaiting collection. A licensed waste collection contractor has been appointed to remove any canteen waste requiring recovery/disposal to a licensed waste management facility.

Occasionally a load will contain minor contaminants (e.g. plastics, metal, wood and paper). These items will be removed on inspection by a site operative and stored in skips in a designated quarantine area pending removal offsite by a licensed waste disposal contractor to an appropriate recovery/disposal facility.

Waste oil products are stored within the existing container on site. Waste oils are disposed of by a licensed waste contractor and removed off site. All oil barrels and lubricants will be stored on spill pallets/ spill trays. Spill kits will be maintained on site and the Company will put in place an emergency response procedure for hydrocarbon spills and appropriate training of site staff in its implementation. Details with respect to the appointed waste recovery/disposal contractor including waste collection permit number and destination (waste licence/permit register number, licensing/permitting authority) are maintained.

## **2.8 Growth – Potential for future expansion**

Continuation of waste recovery operations in accordance with the scheme proposed will provide for the security of the existing business of the Applicant for the foreseeable future. The applicant owns the land and as such has a direct interest in ensuring the lands are returned to a beneficial after-use at the earliest opportunity in accordance with the progressive restoration scheme proposed. There will be significant agricultural potential in the 51.44ha that will be restored. Kilsaran will work also with the local community groups to ensure that the public park's potential is maximised.

The ultimate goal however in the operation of the proposed facility will be to restore the site to its agricultural status and exit the proposed waste licence as soon as is practicable.

## **2.9 Associated Developments**

There are no associated developments identified in relation to this development at this point in time.

## **2.10 Cumulative Impacts**

Given the fact that there are no similar developments in the nearby area it is felt that there will be no significant cumulative impacts accruing from this proposed development.

## 3.0 ENVIRONMENTAL CONSIDERATIONS

The following sub-sections are intended to assess and describe specific areas of the existing baseline environment, to identify potentially significant impacts of the proposed development in respect of these areas, and to detail any proposed mitigation measures and on-going monitoring programmes, where appropriate.

### 3.1 HUMAN BEINGS

#### 3.1.1 Introduction

All projects and developments that require an EIS *by virtue of their nature, size and location*, have the potential to have an impact on the environment. The impact on human's beings forms one of the most important aspects to be considered in an EIS. Any likely significant impact on human beings, including their community and activities, must therefore be comprehensively addressed. The principal concern in respect to this proposed development is that human beings should experience no significant unacceptable diminution in an aspect, or aspects of 'quality of life' as a consequence of the construction and operation of the proposed development.

This section of the EIS has been prepared in order to establish the human environment in the vicinity, and to assess the potential impact, if any, arising from the proposed restoration of the existing aggregate Quarry at Tullykane, Kilmessan, Co. Meath, on the existing environment in respect of human beings. It will also address the impacts foreseen in relation to the proposal to gift a portion of the existing site to a local constituted organisation for the purposes of developing a sports ground, park and walking facility and a sensory park and playground. Matters related to water, air quality, noise, landscape and other such environmental impacts are not considered here, as these are more appropriately dealt with in their respective sections of the EIS. Thus, the impacts of the proposed development on human beings in relation to particular issues are addressed in the following sections:

- Water, Section 3.2
- Air Quality Section 3.2
- Noise Section 3.2
- Landscape Section 3.2
- Cultural Heritage Section 3.2
- Material Assets Section 3.2
- Traffic Section 3.2

The issues considered here include, land use, population, economy & employment, social infrastructure, amenity, tourism and recreation and health and safety. The potential impact on human beings resulting from the proposed development is assessed, and possible mitigation measures proposed to reduce any significant impacts.

### 3.1.2 Study Method

The human environment was assessed by undertaking a desktop study and conducting visits to the site and the area and a few meetings with the local people in particular those proximate to the site itself. The desktop study was undertaken to compile, review and interpret available information and data pertaining to the human environment of the site and area. The desktop study involved the assessment of all relevant demographic and socio-economic data for the area, much of which was sourced from the Central Statistics Office (CSO). The Meath County Development Plan (2013 – 2019) was also reviewed, whilst there are no plans for towns, villages or local areas relevant to the proposed development site. Prior planning and environmental reports on the Tullykane quarry provided much of the site-specific information. In addition, the desktop study used: (a) maps and site layout plans of the existing quarry development; (b) a copy of the conditions imposed on the quarry development under existing planning permissions for extraction; (c) Greater Dublin Area Regional Planning Guidelines 2010-2022 (Dublin Regional Authority & Mid-East Regional Authority 2010); (e) the National Spatial Strategy 2002-2020 (DOELG 2002); and (f) the National Development Plan 2007-2013 (DOT 2004).

In preparing this section, regard was given to the relevant guidelines and recommendations set out in 'Guidelines on Information to be contained in Environmental Impact Statements' (EPA 2003). It is considered that there is a wealth of available data and information, which is sufficient to adequately assess the local environment with respect to human beings.

The assessment of impacts on the human environment were considered using criteria such as: (a) location of nearest sensitive receptors; (b) disturbance to the general amenity of the local environment; and (c) pre-existing use of the land and area. The construction and operational phases of the proposal were both considered. In carrying out the assessment both positive and negative impacts were considered in each case, and the significance of the impacts are rated as being either: imperceptible; slight; moderate; significant; or profound (See Table 3.1.3).

### 3.1.3 Proposed Restoration of the existing Quarry and development of the Public Amenity Park

Whilst for the past few years quarrying at the existing quarry at Tullykane has been suspended there is still the potential to quarry there for an additional 14 years. Kilsaran Concrete has taken a commercial decision whilst being very cognisant of the existing climate regarding the availability of recovery facilities for soil and stone and also the industry claims of a scarce resource in respect of same which it is claimed is halting the progression of certain infrastructural developments and which has the potential to stall completely the recovery in the country. Kilsaran have weighed up the commercial viabilities and deemed that it wishes to cease extraction from Tullykane and begin a restoration process for the quarry. The restoration of the quarry will predominantly involve the importation of soil and stone from the County Meath and Greater Dublin Metropolitan Area to backfill the existing excavated quarry. This will result in a resumption of the traffic journeys to the facility at a level of 72 truck movements per day. This represents a reduction of 50% on the consented traffic volumes.

Coupled with this Kilsaran recognise that the local community have been very receptive to the quarry and its activities over the past number of years and through various discussions with locals have deemed that there is a perception within the community that it would benefit greatly from the development of a public amenity facility incorporating a community park with playing fields, amenity walk and playgrounds and sensory parks for disabled users. Kilsaran propose to develop this facility in accordance with the plans submitted as part of this development contingent upon there being a suitable constituted local group who would be in a position to take it over and run the facility in accordance with the requirements of the community in general.

### 3.1.4 Receiving Environment

In this section, land use, recent demographic trends, employment characteristics, social infrastructure and amenity and tourism are examined.

#### 3.1.4.1 Land Use

The predominant land use within the application site, which is co-located within the quarry site, is by definition that of quarrying activities related to the extraction of sand and gravel and associated operations such as placement of soil and stone in quarry restoration. The land-use in the area consists of a patchwork of agricultural fields that are designated as pasture and subordinate non-irrigated arable land, reflecting medium-high intensity agricultural.

The proposed development site comprises the entirety of the quarry site, and the existing applicants land holding, which covers an area of c. 52.0 ha, and is shown on site layout drawings. The western section of the quarry site (i.e., public amenity park proposed area) is scrub land not used in the quarry itself which is proposed for use in the development of the public amenity park.

There are 14 established individual residences within a 500m radius of the site. There are no dwellings on the site or landholding.

#### 3.1.4.2 Population and settlement

Analysis of the 2011 Census indicated that in the 2006–2011 period, Meath experienced one of the highest population increases amongst the 26 counties (i.e., 13.1%), and for the first time the population eclipsed the pre-Famine population of 183,828 in 1841. Meath is the third most populace county in Leinster after Dublin (i.e., 1,273,069) and Kildare (i.e., 210,312). A population of 109,732 was recorded in 1996, 134,005 in 2002, 162,831 in 2006, and 184,135 in 2011, representing increases of 22.1%, 21.5% and 13.1% for the three inter censal periods.



Analysis of the 2016 Census preliminary results show County Meath to have had an increase in population of 5.9 % in the inter censal period 2011 – 2016.

Meath's share of the provincial population (i.e., 2,295,123) grew from 7.09% in 2006 to 7.35% in 2011. Meath, along with Dublin, Louth, Kildare and Wicklow, comprise the "Functional Area of the Dublin City Region" (FADCR), and with a population of c. 1.8 million, accounts for 42% of the population of the State (Walsh & McNicholas 2009). The latter authors noted a contrast between areas of population decline in the inner suburbs of Dublin and various rural parts, compared to areas of high increase in southeast Meath, northeast Kildare and Fingal. This is reflected in County Dublin having the lowest population growth rate (i.e., 7.24%) in Leinster for the 2006-2011 inter-censal period, whilst the population of the FADCR increased by 8.64% in the same period. Meath's population represents an increasing proportion of the population of the FADCR from 9.18% in 2006 to 9.56% in 2011. Similarly, Meath's population as a percentage of the population of the Greater Dublin Area (GDA – includes Dublin, Meath, Kildare and Wicklow, but excludes Louth), also increased to 10.2% in 2011.

There are numerous large to medium towns with legally defined boundaries in Co. Meath, namely Navan (pop. 28,158), Ashbourne (pop. 11,338), Ratoath (pop. 9,043), Dunboyne (pop. 6,959), Dunshaughlin (pop. 3,903), Kells (pop. 2,208) and Trim (pop. 1,441). There are other significant urban areas, including the *census towns* of Drogheda Environs (i.e., 5,983), Laytown-Bettystown-Mornington (pop. 10,889), Maynooth Environs, Kilcock Environs, and a host of smaller towns and villages, including Duleek, Stamullen, Oldcastle, Athboy, Slane, etc. The nearest urban centre to the Tullykane site is the village of Kilmessan, Co. Meath, which is designated a Moderate Sustainable Growth Town within the settlement hierarchy established in the GDA Regional Planning Guidelines (Dublin Regional and Mid East Regional Authorities 2010).

The Dublin Regional and Mid-East Regional Authorities designate Navan and Dunboyne as Large Growth Towns I and II, respectively, whilst Ashbourne, Dunshaughlin, Kells and Trim are designated as Moderate Sustainable Growth Towns. Because of differences in the way boundaries between urban and rural areas are incorporated into the 2006 and 2011 censuses, it is difficult to give a consistent statement on the population growth of these towns. However, by including both urban and rural components in the comparisons, it is apparent that the population growth in the 2006-2011 period for Navan was 14.9% (i.e., 24,851 versus 28,559), compared to Dunboyne at 22.8%, Ashbourne at 33.0%, Dunshaughlin at 15.3%, Kells at 12.2%, and Trim at 20.4%. It is apparent from the data that the population growth of the towns generally increased with proximity to Dublin.

The National Spatial Strategy (NSS) recognises the strong functional interrelationships between the Dublin and the Mid-East regions as the GDA (DOELG 2002). There are a large number of towns in the GDA, and these are largely located on the main transport corridors radiating out from Dublin, such as the M1 (Swords, Balbriggan, Layton-Bettystown-Mornington and Drogheda), N2 (Ashbourne, Ratoath, Duleek and Slane), the M3 (Dunboyne, Dunshaughlin, Navan and Kells), and M4 (Maynooth, Kilcock and Enfield). The NSS also identifies Dublin as the only Gateway within the Dublin and Mid-East Region or GDA, and does not identify any Hubs. Within the north central

sector, which includes all of Meath and the wider area around Kilmessan, there are three Primary Development Centres identified, namely Drogheda and Balbriggan on the M1, and Navan on the M3, and the County Town of Meath. These centres are strategically placed, strong and dynamic urban centres, located on major transport corridors, where development in the hinterland of Dublin should be concentrated.

### 3.1.4.2.1 The village of Kilmessan



Kilmessan is located in the south of County Meath, some 13km from Navan and 10km from both Trim and Dunshaughlin. Kilmessan lies at the junction of five third class roads which meet in the centre of the village. It is one of a small number of development centres in the county which is not served by either a national or regional road. It is considered that this is a causal factor in the village not having experienced a comparable level of population growth as other centres in the south and east of the County. Kilmessan, designated as a Village in the County Settlement Hierarchy, essentially provides local services for a generally rural hinterland. It has developed in a linear fashion along a county road primarily between the former Navan-Dublin railway line to the west and the River Skane to the east. The southern part of Kilmessan has been designated as an Architectural Conservation Area (ACA). Large mature trees play a very significant role in defining space and views within the ACA. Furthermore, the attractive stone walls and mature trees within the ACA form a pleasant backdrop to the village. The village contains a number of buildings which add significantly to its character.

The statutory land use framework for Kilmessan endeavours to maintain and add to a built environment that is both attractive and distinctive, and which creates a unique sense of place for

those who both live and work within, as well as those who visit, the village. This will be achieved through the sensitive treatment of appropriate infill development and the conservation of important or key buildings. The provision of a compact and vibrant village centre is essential if Kilmessan is to cater for its current and future population needs in a sustainable manner. The consolidation of the village will be enhanced through appropriate street finishes, footpaths, green spaces and the redevelopment of key neglected infill sites.

The household allocation provides for a more significant extension than normally befitting a village in the county settlement hierarchy. This reflects the positioning of the village along the proposed Phase II extension of the Navan – Clonsilla rail line whilst noting that this project is not expected to be advanced within the life of the County Development Plan. This land use framework provides that lands identified for development are closely linked to, and integrated with, the existing village fabric, thereby encouraging more sustainable modes of transportation such as walking and cycling. Furthermore, it promotes the future development of the village in a co-ordinated, planned and sustainable manner in order to conserve and enhance the established natural and historical amenities of the village and its intrinsic character.

The village is currently served by the Dunshaughlin Sewerage Scheme which was subject to an extensive upgrade between 2003 and 2006. The scheme serves the town of Dunshaughlin and a number of villages including Kilmessan, Dunsany and Kiltale. The new wastewater treatment plant has a current capacity of 12,000 population equivalent (PE). There remains 2,500 PE available in the waste water treatment plant which must be allocated between all of the settlements served by same. Water supply for the village is obtained from the Kilmessan water treatment plant which has a capacity of 1,500 PE. The remaining PE for the village is 200. Future development proposals will be considered in this context. There is presently limited remaining capacity available in the piped water supply to serve Kilmessan having regard to the existing commitments in the form of extant permissions for multiple unit residential developments. All development proposals shall be considered in the context of the available waste water and water supply capacity. It is accepted that the future development of Kilmessan and the realisation of the household allocation from the Core Strategy may not occur until the water services constraints outlined above have been remedied.

The land use pattern evident in Kilmessan typifies other villages in the County which have undergone significant residential expansion during the Celtic Tiger years, a relatively compact and limited village core with residential developments located off the radial routes to the village centre. Access to backlands within the village core (identified as B1 “Village Centre” land use zoning objective) should be conserved. The village centre area has been largely retained in residential use. Whilst it is accepted that most Irish towns and villages are characterised by residential uses fronting onto a main street, a level of commercial activity is also required to make villages viable. In order to ensure that such possibilities can be realised, the level of residential versus commercial use should be monitored where “living over the shop” schemes should be promoted to ensure a non-residential ground floor use. Relaxation of development standards may be considered where appropriate backland development can provide alternative residential accommodation to secure on-street commercial activity.

The land use strategy is informed by the reservation of the detailed design of the Navan Rail Line Phase II to the west and the River Skane and associated flood plains to the east. Whilst adequate lands have been identified to allow the village to expand upon its residential and commercial function, it is considered that the lands located between the rear of properties on the Main Street and the rail line shall be preserved from development. This area has been zoned as White Lands with an objective, 'To protect strategic lands from inappropriate forms of development which would impede the orderly expansion of a strategic urban centre'. Should a decision be taken to seek planning consent for the development of the rail line and a commitment is given to construct same, the master planning of this strategic area could be considered.

Kilmessan has been the subject of a moderate increase in the extent of residential development in recent years, specifically the construction of one medium scale residential development project to the east of the Main Street. This growth is evidenced by the population increase between 1996 and 2011 from 230 to 586 persons, an increase of some 65% over this 15 year period. The Core Strategy of the County Development Plan seeks to limit the further expansion of villages at a rate reflective of their position in the County

Settlement Hierarchy. However, as outlined previously, it is recognised that the detailed design of Phase II of the Navan rail line includes a station to serve Kilmessan. Although a timeframe has yet to be confirmed for the delivery of this project, the household allocation is cognisant that the Regional Planning Guidelines emphasise that growth should be focused on areas served and to be served in the future by public transport. Volume 4 of the County Development Plan indicates that the household allocation to Kilmessan endeavours to support the potential investment in public transport. It will be important to monitor Government policy in the area of capital infrastructure together with the timeframe for the delivery of the rail line. The Core Strategy of the County Development Plan (Table 2.4 refers) provides a housing allocation of 159 no. units to Kilmessan over the 2013-2019 period. There are 39 no. committed units that relate to six extant planning applications in the village which are identified on the accompanying land use zoning objectives map.

The average density set down for Kilmessan in the County Development Plan is 35 units per hectare. It is clear that this is predicated on the delivery of Phase II of the Navan Rail Line as the average density for all other villages in the County Settlement Hierarchy (Table 2.4 refers) is a more modest 20 no. units per hectare. In this context, there is a requirement for 4.5 hectares of residential land to satisfy this allocation. The areas identified to accommodate the 159 no. residential units provided for under Table 2.4 of the Core Strategy comprise of 3.94 hectares to the north of the village, 0.6 hectares adjacent to Kilmessan Green residential development (both identified with an A2 "New Residential" land use zoning objective) and 0.85 hectares zoned for B1 "Village Centre" land use to the north of Evergreen Court and Kilmessan Village residential schemes. The 3.94 hectare site to the north of the village would need to be accessed from an existing residential development to the south, Bective Lodge. It is noted that planning permission has been granted for a new access off the Main Street and through Bective Lodge to access this land. The development of the 0.6 hectares of residentially zoned land would be a natural extension of Kilmessan Green residential development.

The 0.85 hectares site identified for village centre uses has the ability to accommodate residential development in conjunction with commercial uses. Meath County Council is satisfied that sufficient lands have been identified within Phase 1 of the Order of Priority to accommodate the household allocation of 159 units. It was considered that the other sites which were previously identified for residential development in the 2009 Local Area Plan were considered less favourable taking into account the strategic flood risk assessment and these lands are not being retained for residential land use as a result. There was no requirement to identify any lands as Residential Phase II (Post 2019) in the village. All designers of multiple residential developments within the Plan boundary are requested to submit a Design Statement to the Planning Authority with their planning applications in accordance with the requirements of Section 11.2 Residential Development of Volume I. A Design Statement is an appraisal of the distinctive character of the area adjoining the proposed development site and must consider how the design and layout of the proposed development responds to, and preferably enriches that character.

Kilmessan is identified as a fourth tier retail centre in the County Retail Hierarchy. It has a small range of retail services, primarily a local convenience shop, a pharmacy, hair dresser, having a greater range and variety of such facilities. Kilmessan featured in the top ten electoral divisions in Meath to record highest rates of growth, with a population increase of 23.6% between 2006 and 2011. The 2011 Census of Population recorded that 61% of the population aged 15 years and over resident in Kilmessan are at work. There are a number of vacant retail units available within the village at present. Kilmessan is located 13km from Navan which is designated a Large Growth Town and 10km from Dunshaughlin, a Moderate Sustainable Growth Town. Having regard to Kilmessan's designation as a village under the settlement hierarchy, its proximity to settlements such as Navan and Dunshaughlin and owing to its road network comprising entirely of county roads, it would not be appropriate to zone land for industrial uses within the village.

The existing land identified for B1 "Village Centre" land use zoning objective within the village centre will also provide opportunities for small to medium sized enterprises to develop. There are a number of commercial units available in a mixed use development located adjacent to Bective Avenue. Furthermore, there is potential within the village to redevelop existing sites. A site of 0.85 hectares to the north of Evergreen Court to the rear of a dwelling fronting onto the Main Street represents a redevelopment opportunity within the village centre. This Development Framework has ensured that sufficient and appropriately located land for village centre uses and employment generating uses has been identified for the life of the County Development Plan and beyond.

#### Community Facilities and Open Spaces

Saint Joseph's National School is located centrally within the village. Immediately adjacent to the school is the Roman Catholic Church, the Church of the Nativity of Mary. The R.C Church which was first erected c. 1820 but more recently modernised as a Protected Structure. The former national school which is a detached five-bay two storey building built c. 1927 stands to the south of the R.C Church. Kilmessan Parish Church (C of I) is located further to the south of the village and was first built in 1731. The Credit Union and Garda station are located to the north of the Church of Ireland. Whilst Kilmessan has a strong sporting ethos, there is a lack of sporting facilities within the village



itself. The well-known hurling and camogie club is located 1km from the village on the Ringlestown Road while Kilmessan Parish joins with Dunsany for Gaelic football utilising the pitch in Dunsany. The badminton club uses the GAA pavilion on the Ringlestown road. Kilmessan ladies and men's soccer teams currently train at the astro-turf pitch at the GAA grounds and are seeking a suitable location for a pitch. There is a considerable amount of land zoned F1 "Open Space" within the development envelop which could be utilised for active and passive recreational amenities. Furthermore, the 2009 Kilmessan Local Area Plan indicated a shortage in burial space in Kilmessan. However it is noted that a recent planning application for an extension to the existing cemetery to the rear of the R.C Church has been submitted to the Planning Authority. It is considered that the extension to the existing cemetery will ensure that adequate lands have been identified for this purpose for the life of the County Development Plan and beyond. The existing level of civic and community facilities should continue to be monitored to cater for the village's needs having regard to the population now resident.

In the 2009 Kilmessan Local Area Plan, land to the west of the village had been identified for transport and related uses along with an area that was subject to the preparation of a Framework Plan (LUP 2 refers which sought the creation of employment purposes in the context of the opening of the railway line and station in Kilmessan). However, the land take for the provision of the railway line and associated infrastructure has now been identified on the land use zoning objectives map which differs considerably from that shown on the Local Area Plan previously, particularly with regard to considerable alterations to the roads infrastructure to the north and south of the town associated with the existing railway bridges, both protected Structures. This now allows the removal of the Framework Plan designation which overlaps with the land take associated with the detailed design of the railway line. The remaining zoned land to the south of the village has been amended to a G1 "Community Infrastructure" land use zoning objective which is being reserved for appropriate uses. The land use zoning objective which applies to the lands to the north has been replaced as they are effectively landlocked following the detailed design of the rail line. It is essential that sufficient community facilities are established, catering for all age groups. Sufficient lands have been reserved for such infrastructure to accommodate both existing and proposed future populations.

On approaching the village from the east, one crosses Kilmessan Bridge, this lies west of a T-junction with an open triangular grassed area. The road is well defined by stone boundary walls at the bridge and by a stone wall that runs the whole way from the T-junction to Church View and further and around the glebe grounds on the western side. The line of trees south of the wall reinforces the boundary character of the wall and together they give good definition to the approach to Kilmessan. St. Mary's Church sits in a picturesque setting with a backdrop of large mature trees with mature Irish yews and other smaller specimens to the foreground. A landscaped open space green area is visible in the front of Bridge View residential development which is to the west of the Glebe house grounds. A large open space area associated with Bective Avenue residential development is visible to the north of the village. It is the policy of the Council to facilitate the improvement and maintenance of open spaces to a very high standard. There is a significant amount of open space associated with the proposed River Skane Linear Park. This area acts as a flood plain to the river but



could be developed as an attractive amenity walk. An indicative route for this walkway has been illustrated on the land use zoning objectives map.

The village of Kilmessan developed in a linear format along the former Navan-Dublin railway line. The river Skane flows to the east of the village. There are a number of two storey residences along the Main Street some of which have been converted to commercial use. A two storey mixed use development was constructed at the northern end of the village centre. Part of the village is designated an Architectural Conservation Area (ACA). The ACA encompasses St. Mary's Church of Ireland and graveyard, the former glebe house and grounds and the police station. The northern end of the ACA includes some houses north of the Navan road from the east and stops at Kilmessan Bridge over the river Skane. The meandering roads in and on the perimeter of the ACA are a distinctive part of its character.

The roads change level with the topography and encompass Kilmessan bridge crossing over the river Skane. The railway bridge with embankments over the former railway line to the west of the ACA is a significant feature on approach from Curtistown direction. Most of the buildings within the village core have painted render facades with slate roofs. However, St. Mary's Church has a stone west gable. Stone is also used for boundary walls and retaining walls around the church grounds and glebe house.

Infill and new proposals must offer high quality designs. The rooflines and elevations of new buildings should be sympathetic to traditional proportions and established patterns of roof pitch within the streetscape. Materials should also be traditional to the local area where appropriate and high quality finishes shall be insisted upon. The reversal of previous inappropriate alterations will also be encouraged. Contemporary design will be considered on a case by case basis and shall be analysed in the context of a particular site. Re-development of backland areas must be appropriate in character and scale with the village. Plot widths should respect established properties and a co-ordinated approach, should be employed to maximise the benefit of a single access. Section 11.1.7 and the Meath Rural Design Guide set down in this County Development Plan deal with Urban Design and Architectural Features. It would be desirable to prepare an urban design framework for the village.

The southern part of the village is located within an Architectural Conservation Area (ACA) and this recognises the special significance of the built heritage which characterises Kilmessan. Care must be taken with regard to any future proposals within the ACA. Information on ACAs is set down in section 9.6.12 of this County Development Plan. Further information on Kilmessan ACA is detailed in the Character Statement which is available on the Council's website ([www.meathcoco.ie](http://www.meathcoco.ie)). A summary of significant views and vistas is also detailed within this document. The best method of conserving historic buildings is to keep them in active use. While a degree of compromise will be required in adapting a protected structure to meet the requirements of modern living, it is important that its special interest is not damaged.

Kilmessan is located on the River Skane, a tributary of the Boyne and in a landscape of high visual quality between the Boyne and Tara Hill. Although its buildings are relatively modest, it is the topography and setting which make the most contribution to its special character. The focal point of the Architectural Conservation Area (ACA) is at the junction of roads at the southern end of the village and is characterised by the Market House, which forms an important visual feature. Other buildings, which add significantly to the character of the village, include the two churches and their grounds. The attractive stone walls and backdrop of mature trees within the ACA are a pleasant visual amenity to the village while the area is enlivened by traditional water pumps, wrought iron gates to the Church of Ireland and Glebe and railings within the grounds.

There are a number of other buildings and structures of historical significance within Kilmessan. The village has eleven structures included in the Record of Protected Structures (RPS). The continued protection of the built heritage of Kilmessan is intrinsic to the sustained success and viability of the village itself. Kilmessan has two items on the Record of Monuments and Places (RMP) which are identified on the land use zoning objectives map as 'sites and monuments'. The Recorded Monuments are a Church, reference ME037-029 and Earthwork, reference ME037-004.

Although the village and the surrounding environs hold environmental assets, none are designated at international level; the village does not contain nor is it adjacent to any Natura 2000 sites. However, the River Skane is a tributary of the River Boyne which is designated a Special Area of Conservation (SAC) and Special Protection Area (SPA). Large mature trees play a very significant role in defining space and views within the ACA setting. Furthermore, there are a number of trees and hedgerows around the village which contribute to its rural character. The protection of the natural environment of Kilmessan is fundamental to the success of this Development Framework, as it provides the village with its own unique identity and amenity background. Therefore it is vital to achieve the correct balance between protection of the natural environment and the future development of the village.

The underlying movement strategy for the village aims to ensure that:

- The development of the area creates movement along looped routes so that internal village movement can take place independently of the Main Street, which carries most of the through traffic;
- Pedestrian and cycle movement is encouraged to keep vehicular traffic to a minimum;
- Streets are designed to encourage pedestrian activity to make going outside a safe and pleasant experience; and,
- All vehicular roads are designed in a manner that incorporates passive calming of traffic.

In addition, the Development Framework is also cognisant of the medium to longer term potential of the delivery of Phase II of the Navan Railway line from Dunboyne (M3) to Navan including a

station at Kilmessan. The movement strategy seeks to maximise the potential use of public transport with the Development Framework envelop as a result.

The 2011 Census recorded that 65% of persons normally resident in Kilmessan aged 5 years and over travel by car to work, school or college. The development of public transport links is critical to ensure a better modal split in favour of public transport away from the private motor vehicle. Kilmessan is strategically placed along the Navan-Dublin railway line. Phase II of the Navan Railway line would involve the re-opening of the railway line from Dunboyne (M3) to Navan. This includes a station to serve Kilmessan. A timeframe has yet to be confirmed for the delivery of this project. However, it is the intention of this Development Framework to protect the designed route of the rail line extension from development which would compromise its future delivery.

Bus Éireann Route 134, Dorey's Forge-Dunsany-Navan, provides one pick up in Kilmessan once a week on a Thursday and one drop off on the same day. It would be beneficial to provide a more regular service as it is important that a village the size of Kilmessan maintains good transportation links to surrounding urban areas, such as Navan, Trim and Dunshaughlin, in order to attract future population and potential business opportunities. Further, it is important to manage vehicular traffic passing through the village and to provide safe crossing facilities for pedestrians and cyclists.

#### 3.1.4.3 Economy and Employment

Historically, Meath's location within the Pale, access to the ports of Dublin and Drogheda, and abundance of productive agricultural land bestowed great advantage on Meath. Today Meath's strategic advantage is its proximity to Dublin and location within the capital city region or GDA, which is the most economically dynamic and progressive area of the country. Meath benefits from this proximity to Ireland's primary economic hub and National Gateway, and the largest market in the State. Meath also benefits from its strategic location on the Dublin- Belfast international corridor linking both capital cities and international airports. The excellent, multi-modal transport infrastructure which provides ready access to Dublin Airport and Dublin Port also delivers strong connectivity throughout the county with four national primary routes, three of which are motorway (i.e., M1, M3 and M4). The fertile soils of Meath also provide the basis for a thriving agricultural and food sector that can support the rural economy and communities. With its rich array of cultural and heritage assets, such as the World Heritage Site of *Bru Na Boinne*, *Hill of Tara*, the seat of the High Kings, *Loughcrew Cairns*, the *Battle of the Boyne* site, *King John's Castle*, *Trim*, *Bective Abbey*, and the *Kells Crosses*, Meath has positioned itself as the '*The Heritage Capital*' of Ireland. Cultural tourism has been identified as a potentially significant driver of the county's modern economy. Meath County Council (2013) recognises that the sustainable development of green infrastructure and natural heritage and the maintenance and improvement of the unique rural and urban built heritage present strong attractions. Meath is the second most affluent local authority area in the Mid-East Region, and sixth most in the State, and in general is not characterised by particular extremes of affluence or deprivation (Haase 2007). The most affluent areas are situated in the South East of the county, most probably including Foxtown, which lie within easy commuting distance to Dublin.

Although urban areas of Meath are home to a greater fraction of the population of Meath (i.e., 105,018 or 57% in 2011), rural areas are home to a substantial population (i.e., 97,117 or 43% in 2011). This urban/rural split of near-parity in Meath (i.e., 1.33) contrasts with that in the State, Mid-East Region and the GDA (i.e., 1.64, 1.74 and 43.6, respectively). Although rural areas account for 43% of the population, only 6% are employed in agriculture, forestry and fishing in 2011. Nonetheless, agriculture is the primary land-use in the county and the economy benefits significantly from the sector. The rural areas are also the location of major natural resources as well as major recreational, amenity, tourist and archaeological resources.

From Table 3.1.2, it is apparent that the dominant employment sectors in Meath are commerce and trade (23%), transport and communications (18%), manufacturing (13%) and professional services (12%).

Examination of the Central Statistics Office (CSO) Live Register figures for County Meath during the recession shows that unemployment levels rose dramatically from the end of 2007 to 2010 and remained a factor of about 3 times the pre-recession levels at c. 12,000 during 2010 and 2011. In the 2011 census, unemployment stood at 18% in Meath compared to 19% nationally. The unemployment level in Meath began to fall gradually from early 2012, and fell below the 10,000 mark in late 2013. In May 2014, the figure stood at 9,775, which equates to an unemployment rate of 9.9%, whereas the national rate was 11.8%. Thus, the unemployment rate in County Meath is approximately two percentage points lower than in the State. The dramatic increase in unemployment has been largely associated with the collapse of the construction industry and the associated service industries. The recent improvement in unemployment figures reflects stabilisation in job losses and an improving economic outlook, combined with the historical pressure valve of emigration.

‘Commerce and Trade’, which includes wholesale and retail trade, banking and financial services, real estate, renting and business activities, is the single largest employer (29.4%) in the Kilmessan ED, with ‘Professional Services’ being the second largest employer (21.7%). Given that approximately half the workforce in Meath work outside of Meath, and given the proximity of the Kilmessan ED to Dublin, it is probable that the dominance of ‘Commerce and Trade’ reflects the large fraction of the workforce in the Kilmessan ED that works outside both the electoral division and county, in Dublin City. ‘Agriculture, Forestry and Fishing’ is the third largest employer (12.3%), as might be expected in a rural electoral division. The fourth largest employer is ‘Building and Construction’ (10.9%), which probably reflects a significant contraction, with the remaining categories constituting minor employers in the Kilmessan ED.

Historically, agriculture and businesses supporting agricultural production would have been the main source of employment in the area and nearby villages and towns. Local farms, McCormack Farms horticulture facility at Martinstown, and Teagasc’s Animal Bioscience Research Centre at Grange, Dunsany, continue to offer employment in agriculture. Kiltale, Monalvy and Rathmoylan offer few employment opportunities, with the nearest commercial and industrial centre being in

Summerhill Enterprise Centre, and Trim, the Enterprise Centre, the Eamon Duggan Industrial Estate, the Fairgreen Industrial Estate, the Oaktree Business Park, and the Scurlockstown Business Park. There are also some employment opportunities related to heritage sites in Trim, and throughout Meath, and in the many golf courses in the wider area. However, outside of Trim, the major employment opportunities for the workforce resident in the Kilmessan ED are probably in Navan and Dublin.

Facilitated by proximity to the M3 and M4 motorways, south Meath, including the Kilmessan ED, recorded high transport energy consumption (Walsh & McNicholas 2009), and is most probably related to commuting to work in Dublin. This is consistent with the average journey times to work, school or college of c. 32 minutes for the Kilmessan ED in 2011.

The quarry at Tullykane has provided employment for local people, both directly and indirectly. Kilsaran Concrete have employed up to 20 workers and drivers directly in the quarrying phase and propose 5 full time employees and up to 20 drivers either directly or indirectly in the proposed restoration scheme. The proposed development requires three people operating a bull-dozer and back-hoe excavator and a vibrating roller driver, one site administrator and one general manager to monitor and inspect the quality and suitability of imported materials being brought to the site for recovery.

#### 3.1.4.4 Social Infrastructure

Please review section 3.1.4.2.1 above for an insight into the location of the village of Kilmessan and a detailed description of the existing social infrastructure available in the village itself. In addition to that there are also the following consideration regarding social infrastructure:

The nearest Post Office outlets are in Kilmessan at c. 3km.

The nearest National School is Kilmessan Mixed National School which caters for the primary education of approximately 211 pupils (2016-2017). Also nearby are Dangan Mixed National School, Summerhill, Scoil Naisiunta Naomh Seosamh, Dunsany, whilst there are four primary schools in Trim. Secondary schools are available at Scoil Mhuire (girls only) and the Community College in Trim, at St. Fintinas Post Primary School, Longwood, at the Community College, Dunshaughlin, at Scoil Dara, Kilcock, and at Maynooth Post Primary School.

The nearest third level Institutions are located in Blanchardstown (i.e., Blanchardstown Institute of Technology or BIT), Tallaght (i.e., Institute Technology Tallaght or ITT), Dublin (i.e., Dublin Institute of Technology or DIT), and Dun Laoghaire (i.e., Dun Laoghaire Institute of Art, Design & Technology or IADT), whereas the nearest universities are National University of Ireland in Maynooth, Dublin City University (DCU) in Glasnevin, Trinity College Dublin (TCD) in Dublin city centre, and University College Dublin (UCD) at Belfield, Dublin.

The Summerhill Primary Care Centre is the Primary Health Care Centre for south central Meath, whilst the Trim Primary Care Centre is also relatively close at c. 6km. The nearest public hospital is

Navan General Hospital at c. 15.5km, followed by Connolly Hospital, Blanchardstown, Dublin 15 at c. 30km. The nearest Fire Station is located in Trim, with next closest located in Dunshaughlin and Navan, all of which are retained services. The Meath Fire Brigade is headquartered in Navan. The nearest Garda Station is located in Kilmessan supported from Dunshaughlin, followed by the Garda Station at Castle St. in Trim, both of which fall within the Eastern Region of An Garda Síochána. Other facilities in the wider area, include the community centres and sports and leisure centres in Summerhill, Trim, Dunshaughlin and Navan. Power to local residences is provided by over-head lines. The water supply for the area is provided by Irish Water through the Kilmessan water treatment and supply scheme, and there are Group Water Schemes in Kiltale and Rathmoylan. Waste Water services are diverted to the Dunshaughlin mains drainage scheme. Most one off-houses are serviced by septic tank systems and proprietary effluent treatment systems. This is the case predominantly for this proximate to the development site where access to mains drainage is not yet facilitated.

#### 3.1.4.5 Amenity Tourism and Recreation

Meath is named after the ancient Kingdom of Meath, and is also known colloquially as the “Royal County”, because of its history as the seat of the High King of Ireland. It was also part of the area known as “The Pale”, which was under the direct control of the English establishment during the Middle Ages. The area of County Meath is very much defined by the Boyne River Catchment, and it is the Boyne Valley which is home to the megalithic tumuluses of Dowth, Knowth and Newgrange at Brú na Bóinne, the Hill of Tara, and the source of the Bradan Feasa or Salmon of Knowledge of Cú Chulainn mythology. With its numerous ancient monuments, ruins, castles, battlefields and Landed Estates (or Demesnes) with their Great Houses, Meath is a county steeped in history.

Kilmessan is located in south County Meath, c. 42.6km from Dublin Airport and c. 48.3km from Dublin Port, with a large smattering of population settlements surrounding. Saint Joseph’s National School is located centrally within the village. Immediately adjacent to the school is the Roman Catholic Church, the Church of the Nativity of Mary. The R.C Church which was first erected c. 1820 but more recently modernised as a Protected Structure. The former national school which is a detached five-bay two storey building built c. 1927 stands to the south of the R.C Church. Kilmessan Parish Church (C of I) is located further to the south of the village and was first built in 1731. The Credit Union and Garda station are located to the north of the Church of Ireland. Whilst Kilmessan has a strong sporting ethos, there is a lack of sporting facilities within the village itself. The well-known hurling and camogie club is located 1km from the village on the Ringlestown Road while Kilmessan Parish joins with Dunsany for Gaelic football utilising the pitch in Dunsany. The badminton club uses the GAA pavilion on the Ringlestown road. Kilmessan ladies and men’s soccer teams currently train at the astro-turf pitch at the GAA grounds and are seeking a suitable location for a pitch. There is a considerable amount of land zoned F1 “Open Space” within the development envelop which could be utilised for active and passive recreational amenities. Furthermore, the 2009 Kilmessan Local Area Plan indicated a shortage in burial space in Kilmessan.



Other heritage attractions in Meath include: the World Heritage Site and visitor centre at Bru na Boinne; Hill of Tara; Loughcrew Cairns; Kells Round Tower and High Crosses; King John's Castle, Trim; Bective Abbey; Battle of the Boyne Site, Oldbridge; Slane Castle; Ardbraccan House; and many more.

Trim is a large historic town and one of Meath's primary historic settlements. The town and its environs are steeped in history and have a wealth of historical and archaeological sites. King John's Castle is sited next to the River Boyne, and its floodplain provides open public space in a picturesque setting. Built by Hugh de Lacy at the end of the 12<sup>th</sup> century, King John's Castle is the largest Norman castle in Europe, dominates the townscape, and is a major tourist attraction. Trim is unusual for the number of surviving medieval buildings, which includes King John's Castle, Talbot Castle, St. Patrick's Cathedral, the Court House, and the Castle Street cottages. The medieval town of Trim boasted 2km of town wall defenses, sections of which survive today either above or below ground. St. Patrick built a church near an ancient ford that crossed the Boyne at Trim, and it was from this that the town got its name. There are fascinating ruins which provide evidence of fervent religious activity in the area. Stone relics abound in St. Patrick's Cathedral, its church and porch revealing a number of medieval graveslabs. St. Mary's Abbey is the remains of an Augustinian monastery founded in the 12<sup>th</sup> century. The Newtown Monuments consist of a large medieval cathedral, two monasteries and small church which date from 1206. The Friary of St. John the Baptist, is the remains of a 13<sup>th</sup> century Augustinian foundation, which was later converted to a hospital in the 18<sup>th</sup> century. The prominent ruins of the Yellow Steeple overlook the town from a ridge opposite King John's Castle. Originally part of the 13<sup>th</sup> century St. Mary's Augustinian Abbey, the steeple dates from 1368. The black Friary of the Dominicans was founded by Geoffrey de Geneville, Lord of Meath in 1263. Meath also offers many other tourist attractions, including: Tower of Lloyd, Kells; eight heritage trails; numerous walking, hiking and biking trails; angling for salmon and trout on the famous Boyne and Blackwater Rivers; water sports at the Irish Aquatic Sports Centre, Summerhill, Boyne Valley Adventure Centre, Trim, and the Rathbeggan Lakes, south of Dunshaughlin; adventure activities at the Boyne Valley Activities Centre, Trim, and the Loughcrew Adventure Centre, near Oldcastle; paintballing and go-carting at the Zone in Navan; and at Tayto Park, Ashbourne. The eco-tourist can enjoy a walk at Girley Bog near Kells, or the nature trail and river walk at Sonairte National Ecology Centre in Laytown. There are also numerous festivals, such as Moynalty Steam Threshing; Tattersalls International Horse Trials and County Fair; and the Slane Castle Music Festival.

Golf enthusiasts visiting the area can enjoy a wide choice of excellent golf courses within short driving distance. Across Meath there are numerous links and heathland courses, including Royal Tara near Navan, The Headfort near Kells, Laytown and Bettystown, Ashbourne, and many others. The nearest course is at Knightsbrook Golf Club, c. 10km to the northwest near Trim, whilst within 20km, there is the South Meath Golf Club at Carberrystown, the County Meath Golf Club at Newtownmoynagh, the Glebe at Dunleever, Trim, and the Jack Nicklaus designed course at Killeen Castle Golf Club, Dunsany, the venue for the 2011 Solheim Cup.

Horse racing is also popular at the annual Laytown Beach Races in September, at the Bellewstown racecourse, Navan racecourse, and at Fairyhouse, the home of the Irish Grand National. Meath is

one of Ireland's top destinations for equestrian sports and horse breeding with world class studs dotted right around the county. There are equestrian activities at numerous nearby equestrian centres, such as Kelly's Equestrian, Kilmessan, Royal Meath Equestrian & Language Centre, Drumree, Pelletstown Riding Centre, Drumree, Kilcarty Equestrian Centre, Dunsany, Bachelor's Lodge Equestrian Centre, Navan, Carton Equestrian Centre, Kilcloon, and Stewarts of Kilcloon.

#### 3.1.4.6 Health and Safety

Operations within the quarry site, and proposed restoration site, are carried out in accordance with all relevant legislation / regulations and with the best work practices for the industry. The policy of the Kilsaran Concrete is to ensure the health and welfare of its employees by maintaining a safe, clean and tidy working environment, and employing safe working procedures. The policy has been extended to include the all external contractors and hauliers, and is in accordance with the requirements of employment legislation, including the provisions of the "Safety, Health and Welfare at Work Act, 2005", and the relevant Regulations.

The wearing of protective clothing such as footwear, helmets and high visibility clothing is mandatory in operational areas. Careful attention is paid to safe practices when carrying out machinery maintenance and ensuring appropriate guarding of moving parts. Adequate fencing, signage and other barriers have been erected around the quarry site, for the safety of the general public and to prevent livestock straying into the development. Large lockable gates are in place to guard against unauthorised and unsupervised entry to the site outside of working hours.

#### 3.1.4.7 The need for the development

In August 2016 the Construction Industry Federation (CIF) of Ireland published a report entitled "Review of Soil Waste Management in the Greater Dublin Area – Market Analysis Report". The report was completed by consultants RPS. The objective of the study was to provide the CIF with the evidence required to support future discussion and communications with members and other key stakeholders on the issues faced by the construction industry relating to the management and recovery of soil wastes. The completed study will support the identification of solutions to address the capacity gaps in the short-term. The geographical focus of the study area was the Greater Dublin Area, specifically the counties of Kildare, Louth, Wicklow and Meath, and the four local authority areas of County Dublin.

The report at the very outset states that *"The recent growth in construction activities has brought to a head an unexpected supply chain issue. Currently contractors and hauliers in the market are experiencing a significant short fall in available capacity for soil wastes arising from construction activities"*.

The activity of recovering soil waste is typically known as backfilling and the scale of activity was addressed in the recent Waste Management Plan for the Eastern Midlands Region. The Plan provides an analysis of the market and a clear policy direction on the issue. At the time it was found that backfilling activities made up a significant treatment capacity in the EMR and the analysis of the

2012 data showed plenty of available capacity. The plan noted that the “relatively low level of utilisation” was a reflection of “the depressed activity in the construction sector in Ireland”. Since the analysis carried out in the plan the construction sector has increased significantly to the extent that market operators are faced with a deficit of capacity for backfilling activities.

Over the period 2013 to 2015 soil waste quantities collected grew by 1.43 million tonnes which is an increase of 126%. This surge in tonnage reflects the strong construction growth in the residential and commercial sectors particularly in Dublin City Centre and environs. The report look at the available known capacities in the licensing, Waste facility permitting and Certificate of registration regimes and highlighted that there would be a shortfall in capacity of operations which will become very significant from 2019 onwards.

	2016	2017	2018	2019	2020	2021	2022	2023
Shortfall	428,680	169,093	421,469	1,354,613	1,546,913	1,748,829	1,876,036	2,351,059

The report concludes the following *“Based on the extensive review of waste and capacity data available it can be concluded that there is a lack of licensed capacity in the Greater Dublin Area to meet current and forecasted growth. This is evident by the early 2016 closure in the area of the two largest soil recovery sites which primarily serve construction activities in Dublin city. New capacity is due to come on stream but this is offset by the closure by 2018 of one of the largest facilities currently operating in the region. There is a clear need to bring additional capacity on stream to alleviate the current shortfall as well as providing security over the medium to long-term. The failure to do so will likely lead to increased costs along the waste supply chain and may also lead to an increase in unauthorised activities such as illegal dumping.”*

The report favours the planned and strategic development of facilities of greater capacity through the EPA licensing system and believes that this must be aided to ensure that existing construction costs are not forced to rise as a result of this scarce resource and also that illegal dumping is not then brought to the fore as a result of nowhere to go with the material.

It is noticeable that there appears to be a lack of new licensed capacities coming on-stream despite a clear market need. Consultation with soil and stone operators indicates that barriers to the development of new licensed facilities include higher operational costs and regulatory obligations associated with these sites. In addition establishing a permitted site is viewed as being a more viable opportunity. Such sites are less onerous both financially and operationally and are often not subject to the same level of enforcement or quality controls of intake materials. The inconsistent approach governing the control and acceptance of intake materials at permitted sites needs attention to ensure enforcement of all soil and stone operators in the market is fair and consistent.

The report recommends in summary the following:

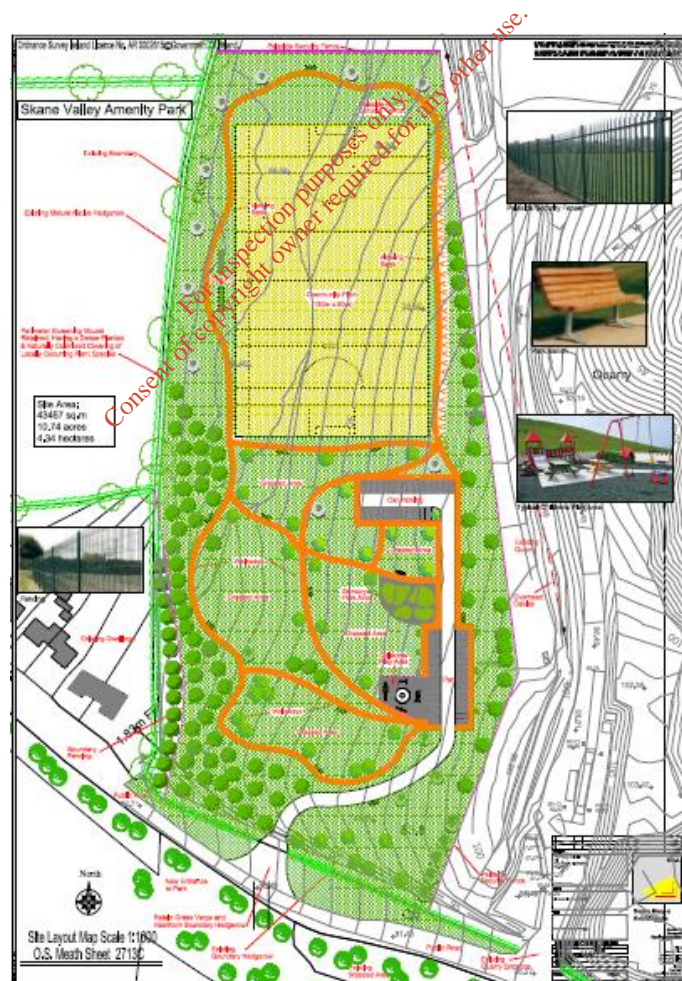
- 1. It is recommended that greater awareness of the capacity shortfall for the recovery of soil wastes is raised by the CIF with all relevant members and key policy and regulatory stakeholders.*
- 2. It is recommended that representatives of the CIF meet with and communicate the findings of this report to the Minister and senior government officials in the Department of Housing, Planning and Local Government and the Department of Communications, Climate Action and Environment. The extent of the problem being faced by construction stakeholders in securing long-term capacity for the recovery of soil wastes is not fully realised by government. The potential impact that this issue will have if not addressed on the construction of new houses, apartments, education and health buildings and key infrastructure for the City and environs it is not fully appreciated. Construction activity may slow to allow for the secure management of soil wastes as temporary stockpiling may not be possible.*
- 3. It is recommended that the findings of this report are communicated by the CIF to senior inspectors in the EPA. The Agency is the authority responsible for issuing, regulating and enforcing waste licenses for soil recovery facilities and it is important that they are informed of the extent of the capacity problem being faced by construction stakeholders. The lack of facilities and capacity in the market has the potential to give rise to an increase in illegal disposal or dumping activities and it is important to engage with the Agency on the broader issue and its potential impacts.*
- 4. It is recommended that the CIF meet and communicate the findings of the report with the waste management office for the Eastern Midlands Region. The central office acts as the lead local authority on behalf of all local authorities in the region to ensure the policies of the waste plan are realised. It is important to establish relationships with the lead local authority office to communicate on the capacity issue and the potential impacts from the continued shortfall from an environmental perspective. The local authorities are responsible for reviewing and issuing soil recovery waste permit and COR authorisations and it is beneficial to build a collaborative relationship with them on the waste issue.*
- 5. It is recommended that the CIF meet with the key facility operators to discuss the capacity problem and engage with them on possibly progressing solutions at large scale existing sites.*
- 6. It is recommended that the CIF explore the suitability of Section 56 of the Waste Management Act as an option to expedite the process of increasing the annual intake tonnage at an existing licensed site. This section is available to local authorities and the EPA to respond to emergency situations to prevent pollution resulting from waste activities.*
- 7. While the current shortfall of market capacity continues, it is recommended that an annual update of available waste license market capacity data is completed to enable the CIF to report back to its membership on the issue as well as engaging with government, the EPA and other key stakeholders.*

*8. It is recommended that the CIF engage fully with local authorities and in particular the National Waste Collection Permit Office on the issue of waste reporting. The completion of accurate market analysis is dependent on robust datasets and the new online system should be supported by the federation and its membership (through timely and accurate reporting).*

*9. It is recommended that the CIF consider researching and identifying the critical industry factors which lead to the surge in waste collection arising. The ability to forecast accurately future growth levels in soil wastes can help provide early warning signals to the market and potentially minimise the risk of capacity shortfalls.*

### 3.1.4.8 The Public Amenity Park

In the overall discussion regarding the proposed development it is imperative that the impact of the proposed development is also reflected in the proposal to construct and hand over to the local community a public amenity park. The park will as discussed in previous sections incorporate the following:



A children's play area, a sensory park area, a community sports pitch (130m x 80m), constructed amenity walkways and grassed areas. The sole focus of this proposal is for Kilsaran Concrete to



acknowledge the local community for its support in the extraction phase of the development and to ensure that the community benefits greatly from the proposed development. With all projects of this nature it is not stipulated in law that the developer must implement a community gain scheme with a view to providing some assistance either financially or otherwise to the community in which the development potentially causes any environmental or other impact. Kilsaran Concrete having been part of the community for quite some time were relatively in tune with the local needs and requirements and have put together a scheme in support of the leisure and amenity objectives of the Meath County Development plan. The plan discussed the fact that there was a perceived shortage of amenity facilities in the local area in particular Kilmessan village with its rich sporting heritage. It was mentioned that *“Whilst Kilmessan has a strong sporting ethos, there is a lack of sporting facilities within the village itself. The well-known hurling and camogie club is located 1km from the village on the Ringlestown Road while Kilmessan Parish joins with Dunsany for Gaelic football utilising the pitch in Dunsany. The badminton club uses the GAA pavilion on the Ringlestown road. Kilmessan ladies and men’s soccer teams currently train at the astro-turf pitch at the GAA grounds and are seeking a suitable location for a pitch. There is a considerable amount of land zoned F1 “Open Space” within the development envelope which could be utilised for active and passive recreational amenities”*. This indicates that the proposal would potentially address some of the shortfalls being experienced currently in the local community from an amenity point of view and furthermore the provision of the amenity park may be welcome to walkers, children and disabled users alike. A discussion on the environmental impacts of the proposal will be had in section 3.1.5.

### 3.1.5 Assessment of Impacts

#### 3.1.5.1 Introduction

The proposed development at Tullykane arises from:

(1) the continued demand of human beings to have their buildings, roads and structures, modified and improved, resulting in the generation of large volumes of soil and stone waste

(2) the requirement to restore land, previously disturbed and degraded by aggregate extraction at the Tullykane Quarry, through backfilling with recovered inert soil and stone. The recycling and recovery of soil and stone is essential to reduce resource utilisation and divert reusable inert waste from landfill. Although Tullykane is a rural location, it is strategically located within a large catchment area with numerous large settlements, such as Kilmessan, Dunsany, Kiltale, Summerhill, Rathmoylan, Moynalvy, Trim, Dunshaughlin, Kilcock, Duboyne, Blanchardstown and Navan, rendering the proposed waste recovery facility well positioned to recover large volumes of inert soil and stone. This will contribute to the diversion of greater volumes of waste from disposal in landfill, as required under the Waste Framework Directive 2008 (2008/98/EC), and the European Communities (Waste Directive) Regulations, 2011 (S.I. 126 of 2011). There is also a preference for the deposition of soil and stone to be underpinned by a beneficial use in order to be considered waste recovery.

The impact on human beings resulting from the proposed continued use of the WRF is assessed here, and possible mitigation measures proposed to reduce any significant impacts. Table 3.1.1 identifies the levels of impacts which are used here in order to evaluate the significance of potential impacts resulting from the proposed continuation of the WRF. These impact ratings are in accordance with impact assessment criteria provided in EPA's "Advice Notes on Current Practice in the Preparation of Environmental Impact Statements" (2003). It is expected that the potential negative impacts on human beings and amenity of the area arising from the proposed development, above those already arising from the quarry, relate mainly to nuisance from noise, dust and traffic. There are a number of potential environmental impacts associated with the proposed development that may directly, or indirectly, affect the local "human" environment. These potential impacts and the mitigation measures proposed are described in the following sections of this report under the headings detailed below:

- Flora & Fauna – Section 3.2
- Water – Section 3.4
- Air Quality – Section 3.6
- Noise– Section 3.7
- Landscape – Section 3.8
- Cultural Heritage – Section 3.9
- Material Assets – Sections 3.10
- Traffic – 3.11

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**Table 3.1.1**

Impact Characteristic	Term	Description
Quality	Positive	A Change which improves the quality of the environment
	Neutral	A change which does not affect the quality of the environment
	Negative	A change which reduces the quality of the environment
Significance	Imperceptible	An impact capable of measurement but without noticeable consequences
	Slight	An impact which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate	An Impact that alters the character of the environment in a manner consistent with existing and emerging trends.
	Significant	An impact which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Profound	An impact which obliterates sensitive characteristics
Duration	Short-term	Impact lasting one to seven years
	Medium term	Impact lasting seven to fifteen years
	Long Term	Impact lasting fifteen to sixty years
	Permanent	Impact lasting over sixty years
	Temporary	Impact lasting for one year or less
Type	Cumulative	The addition of many small impacts to create one larger more significant impact.
	“Do- Nothing”	The environment as it would be in the future should no development of any kind be carried out
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant impact is of greater significance than the sum of its constituents
	Worse Case	The impacts arising from a development in the case where the mitigation measures may substantially fail.

### 3.1.5.2 Land Use

The existing quarry development has been undergoing a progressive extractive programme, removing aggregate for the construction of nationally important infrastructure. A decision has been made internally by Kilsaran Concrete to now engage in a process of restoration of the quarry back to its original status as agricultural land. A waste licence is now required to complete the restoration programme. The impact of the extractive works to date could be described as irreversible having extracted core material and transformed it for use in another context. However this is regarded as a worst case scenario as the legislation and current abundance of backfill material will ensure that the land can be brought back to agricultural use through this proposed development. The medium term impact is that the land and land use will be rendered brownfield or redundant with the exception of its ability to act as a resource recovery for inert waste materials. The longer term impact is invariably that the land will be brought back to a sustainable use in the future. This will be viewed as a significant long term goal for the development.

The developer anticipates through the modicum of the waste licence, putting in place a number of mitigation measures with respect to environmental management and monitoring to ensure that operations do not result in significant impacts on the surroundings, including the human environment.

The area has an established history of aggregate working, and these activities have coexisted with other land uses in the area, particularly medium to high intensity agriculture. On completion of site activities, the site of the former quarry will be decommissioned and integrated back into the surrounding landscape, with the attendant improvement to the amenity of the area.

The 4.34 hectares that has been set aside for the public amenity park will have a very significant impact on Human beings and local people in particular in the area. There will be benefits to walkers, sports teams and athletics organisations and children both able bodied and disabled. This conversion of land from scrub to potentially rough grazing land to a public amenity is seen as a positive change in land use, one for the better of the community.

### 3.1.5.3 Population and Settlement

It is not anticipated that the proposed restoration operations will result in any change in population. However, by supporting and maintaining the workforce living in the area, it is considered that the development will have a positive impact on sustaining the population. There has been some discussion among neighbour proximate that the lorry's and trucks bringing material to the site will have an effect on the quality of life of the local population and may indeed bring inconvenience and health and safety implications to the immediate area. This will be dealt with in greater detail in section 11 of this document. The impact therefore is deemed to be neutral and only slightly significant. The duration again is medium term and the impacts will be relevant for that period.

Social improvement may occur due to the availability of new agricultural land and this may have a very minor positive impact on population numbers but not anything significant.

#### 3.1.5.4 Economy and Employment

The quarry at Tullykane has provided employment for local people, both directly and indirectly. Kilsaran Concrete have employed up to 20 workers and drivers directly in the quarrying phase and propose 3 full time employees and 2 to 3 temporary employees and up to 20 drivers either directly or indirectly in the proposed restoration scheme. The proposed development requires five people to operate the facility effectively. It is therefore stated that the impact of the development is to be largely seen as significant and positive in that there are going to be employees facilitated by the development. It will be a medium term impact as a result of the duration however it will be environmentally very significant in that it will be less intrusive than a resumption in the excavation aspect of the existing development and it will result in the creation of a new agricultural resource i.e. a new agricultural opportunity via the new field on completion.

#### 3.1.5.5 Social Infrastructure

The proposed development would provide a valuable and necessary resource to the county and wider region, providing a beneficial use for the recovery of inert soil and stone as an alternative to landfill. The existing quarry would need to be remediated at any rate in the future and this proposal fast tracks that remediation. The developer has an established record of meeting its regulatory obligations and current environmental standards. Therefore this particular development will in accordance with the report from the construction Industry Federation go a long way to providing the required infrastructure which will benefit the greater Dublin area and home counties socially from the point of view of allowing for the continuation of the resurgence of the building industry by providing suitable and vital infrastructure for the management of soil and stone from future developments for a period of 14 years from commencement.

The proposal from Kilsaran Concrete to construct and gift to the community a public amenity park, is envisaged to have a significant social impact on the local community. The county development plan has identified that certain codes of sporting organisation must share facilities and also move to other neighbouring communities to avail of their facilities. This park will be a park for the people of Kilmessan and is intended to be available to athletics, runners, walkers, sports teams, children and also disabled children via the sensory park area and it is designed to be a flagship template for the Kilsaran group for future recovery projects.

The impact of this development is regarded as medium term significant in relation to the provision of a facility for the recovery of inert soils and stone which provides security to the building industry that facilities of this nature are available to support future developments. The impact is to be seen as positive socially with the "Do-nothing" alternative seeing a resumption to quarrying and a commensurate elongation of the active lifetime of the quarry where quarry is permitted to continue for an additional 10 years and then the remediation process would begin. This effect of this decision

would be seen as being a longer term impact with more negative impacts eventually and gradually becoming positive orientated in the latter years. It is felt that environmentally the proposed option offers the least impact.

From the point of the proposed development of the Public amenity park, the impact socially will be long term and significant and will represent and demonstrate the synergistic impact to be derived from successfully integrating joined up thinking with respect to recovery operations and community gain. In respect of the community being unable to take over the proposed public amenity over a period of time, the land proposed will be reintegrated into the proposed remediation plan and dealt with in a similar fashion to the overall quarry remediation. The impact of this would be socially negative versus what could have been. This would however have the same impacts socially as the remainder of the recovery facility.

#### 3.1.5.6 Amenity, Tourism and Recreation

Given the very rich cultural heritage surrounding the proposed development site and the very strong tourism industry that it generates a key fundamental consideration for such a remediation project would be whether either visually or generally the proposed development would have any impact on amenity, tourism or recreation. It is not envisaged that the proposed development will have any negative impact on amenity tourism or recreation for the point of view of the backfill of the quarry.

In respect of the proposed public amenity park however it is envisaged that the development will have a significantly positive long term impact on the amenity value of the area through the provision of the vision for the facility. The do noting alternative would be seen to have a potentially negative impact in that the potential for the amenity park would not get realised.

From a tourism point of view it is imperative that the landscape is protected in any proposed development and that the views from significant national heritage sites like the "Hill of Tara" are protected. It is an aim for the development to integrate seamlessly with the surrounding environment thus creating a neutral long term impact.

#### 3.1.5.7 Construction

There are potential impacts on human arising from the operational phase of the proposed, and these include dust, noise and traffic (Refer to EIS Sections 3.6, 3.7 & 3.11 respectively). The proposed development must however be assessed also from the point of view that those impacts will be shortened in duration by approximately 10 years with the cessation of the quarrying and extraction and the immediate move to backfill and remediation.

The proposal itself reduces the potential impact locally and is therefore regarded as moderate short term impact which through proper management and control can be successfully mitigated against in that medium term.

The construction of the public amenity park will potentially have an impact similar to the over potential construction impacts on human beings. This however will be short term in duration and is not deemed as significant rather a slight temporary impact.

#### 3.1.5.8 Other

There are no Protected Structures, Architectural Conservation Areas, NIAH structures or NIAH historic gardens or designed landscapes within the proposed development area. As a result there will be no direct or indirect construction impact on the archaeological, architectural or cultural heritage resource.

The impact of inert waste disposal on this site will be considerable in local ecological terms but will not result in any loss of heritage values in the locality. In the long-term it will create pasture and, in habitat terms, simulate a feature of the pre-quarrying, pre-existing landscape.

#### 3.1.5.9 Do Nothing Impacts

If the proposed development did not proceed, the recovery of inert soil and stone at the proposed facility would not occur, and result in the failure to divert these volumes from disposal in landfill, as required under the Waste Framework Directive 2008. Furthermore, the Tullykane site would be unable to complete the phased restoration of the quarry void and the proper reinstatement of the land. Additionally, the proposed facility would be forced to cease proposed operations resulting in the loss of employment. This would have a significant and direct negative impact on the local human environment. The restoration activity would result in the creation of a sizeable area of agricultural land which would come back into agricultural production having been lost and this will have an impact on food supply and or crop generation thus impacting positively on human beings.

The failure to complete the proposal to create the public amenity park would deprive human beings of a significant resource which would in the long term provide a huge amenity to all human beings proximate to the development.

In the event that this development does not proceed Kilsaran Concrete have intimated that it is their intention to resume quarrying at the site which would invariably lead to 10 years more quarrying and then a phased restoration of the site for a period of years after that. It is considered here that that simply by the passage of time will lead to more longer term impacts locally.

#### 3.1.6 Mitigation and Monitoring

Proposed mitigation measures with regard to environmental issues such as air quality, noise, traffic and visual impacts are provided for and are described in detail under the relevant sections (See above list in Section 3.1.5.1). Any impact on the natural environment will be mitigated against to the greatest degree practical, thereby minimising any associated impact on the "human" environment. Kilsaran Concrete has established an on-going environmental monitoring programme for the Tullykane quarry and will be invoking a full environmental management programme consistent with

the requirements of the Environmental Protection Agency waste licence. The programme will allow for on-going monitoring of environmental emissions (e.g., noise, dust, water) from the site, thereby assisting in ensuring compliance with any future requirements or regulations. The results of this monitoring will be made available to the EPA and the Local Authority on a regular basis, where members of the public may examine it. The future monitoring programme will be revised accordingly, subject to compliance with any conditions attached to a decision to grant a Waste Management License. The development can be controlled and regularised in accordance with the scheme as outlined in this document, through continued environmental monitoring and by conditions imposed by the EPA. The proposal will have no major and/or long-term effect on the human environment.

### 3.1.7 Residual Impacts

Once the proposed development is authorised with a Waste Management License, and mitigation measures provided for, there are no significant residual impacts envisaged in terms of community and other socioeconomic issues.

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## 3.2 Flora and Fauna

### 3.2.1 Introduction

The purpose of this section is to describe and assess the ecological effects of the development and to comment on the mitigation measures that have or will be undertaken. Scott Cawley Ltd. was commissioned by RME Environmental on behalf of Kilsaran International Concrete Ltd. to undertake an Ecological Impact Assessment (EclA) of the proposed rehabilitation works at Tullykane Quarry in Kilmessan, Co. Meath (Figure 1). The aims of this Ecological Impact Assessment are to:

- Establish the ecological baseline for the subject lands;
- Determine the ecological value of the identified ecological features;
- Assess the impact of the proposed development on ecological features of value;
- Recommend mitigation measures to avoid, reduce and remedy any identified ecological impacts; and,
- Identify any residual impacts of the development post-mitigation.



Source reference: Orthophotograph from ArcGIS World Imagery © Esri. Sources: Esri, Digital Globe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

**Figure 3.2.1: Site Location Map - red line indicates the boundary of the subject lands (i.e. Tullykane Quarry)**

### 3.2.2 Methodology

#### 3.2.2.1 Relevant Legislation and Policy Context

The assessment of the likely impacts of the proposed development on ecological resources has taken account of the following policy documents and legislation, where relevant.

#### National and International Policy and Legislation

- *Wildlife Acts 1976 - 2012* (as amended); hereafter collectively referred to as the Wildlife Acts.
- *European Communities (EC) (Birds and Natural Habitats) Regulations 2011* (S.I. No. 477/2011 (as amended); hereafter referred to as the Birds and Habitats Regulations.
- *EU Birds Directive 2009/147/EEC*
- *EU Habitats Directive 92/43/EEC* (as amended)
- *Flora (Protection) Order, 1999*
- *Actions for Biodiversity 2011 – 2016, Ireland’s National Biodiversity Plan*

#### Relevant Local Policies and Plans

- *National Biodiversity Plan 2011 – 2016* (Department of Arts, Heritage and the Gaeltacht, 2011);
- *Meath Development Plan 2013-2019* (Meath County Council, 2013);
- *Draft Meath Heritage Plan 2015-2020* (Meath County Council, 2015);
- *Draft Meath Biodiversity plan 2015-2020* (Meath County Council, 2015); and;
- *Eastern River Basin District, River Basin Management Plan 2009-2015.*

3.2.2.2 The baseline ecological surveys, evaluation and impact assessment have taken account of the following guidelines, where relevant.

#### General Guidance

- *Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater and Coastal* (CIEEM, 2016).
- *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009).
- *Guidelines on the Information to be contained in Environmental Impact Statements* (EPA, 2002).
- *Advice Notes on Current Practice (in preparation of Environmental Impact Statements)* (EPA, 2003).

#### Habitats and Flora

- *Best Practice Guidance for Habitat Survey and Mapping* (Smith et al., 2011).
- *A Guide to Habitats in Ireland* (Fossitt, 2000).
- *Ecological Guidance for Local Authorities and Developers* (Scott Cawley, 2013).

#### Fauna

- *Bat Mitigation Guidelines for Ireland* (Kelleher & Marnell, 2006. NPWS).
- *Bat Surveys: Good Practice Guidelines* (Bat Conservation Trust, 2016).

- *Environmental Planning and Construction Guidelines Series* (National Roads Authority, 2005 – 2011).

### 3.2.2.3 Desk Study

A desk study was undertaken in order to collate available information on the existing local ecological environment. The following resources and databases were consulted in the production of this report:

- Data on rare/protected/threatened species held by the National Parks and Wildlife Service (NPWS) for Irish National Grid 10km square N85 accessed online <http://www.npws.ie/mapsanddata> 18th January 2016;
- Data on designated sites was obtained from the online National Parks and Wildlife Service (NPWS) database <http://www.npws.ie/mapsanddata> 18th January 2016;
- Data on rare/protected/threatened species held by the online National Biodiversity Data Centre database, available online at <http://www.biodiversityireland.ie> 18th January 2016; and,
- Records of bat roosts in close proximity to the site were also queried using the Bat Conservation Ireland database (the precise location of these roosts is confidential).

### 3.2.2.4 Field Surveys

#### Habitats and Flora

The site and its environs were surveyed on the 26<sup>th</sup> September 2016, in bright, dry conditions. All habitats were classified using the *Guide to Habitats in Ireland* (Fossitt, 2000), recording dominant species, indicator species and/or species of conservation interest as well as any invasive species. Plant nomenclature follows the *New Flora of the British Isles – Third Edition* (Stace, 2010).

#### Fauna Survey

Multi-disciplinary surveys for fauna were conducted on the 26<sup>th</sup> September 2016 during the habitat survey. The presence of fauna was substantiated through the detection of field signs such as tracks, feeding signs, and droppings, as well as by direct observation. The bat survey was conducted at the site having regard to the following guidelines:

- Bat Surveys for Professional Ecologists: Good Practice Guidelines (Bat Conservation Trust (UK), 2016)
- Bat Mitigation Guidelines for Ireland (National Parks and Wildlife Service, 2006)
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2006a)
- Design Manual for Roads and Bridges: Nature Conservation Advice in Relation to Bats (Highways Agency, 2001)

A daytime external visual assessment of the buildings located within the subject lands for the presence of bats was undertaken 26<sup>th</sup> September 2016. The assessment involved the examination of the external areas of each building, where accessible, for signs of bat activity and potential features

that may be utilised by bats. None of the buildings were considered suitable for roosting bats. There were no attic spaces present and limited to no roof structures suitable for roosting bats.

Trees located across the subject lands were also examined from ground-level as potential bat roosts. They were assessed based on the presence of features commonly used by bats. Trees were categorised as being either suitable or unsuitable for use by bats, according to the presence of potential roost features as outlined below in Table 1. Other factors that were assessed along with the presence of any potential roost features, and which may affect their suitability, included the aspect of these features and their height above ground.

**Table 3.2.1: Potential Roost Features suitable for use by bats.**

Potential Roost Features	
Decay Features	Damage Features
Woodpeckers Holes	Hazard beams
Knot holes	Frost cracks
Flush cuts	Subsidence (shearing and helical splits)
Tear outs	Lightning strike
Double leaders	Impact shatter
Wounds and cankers	Desiccation fissure
Butt rot	Transverse snaps
	Lifting bark
	Unions
	Ivy

None of the trees located within the subject lands boundary were considered suitable for roosting bats as they did not support any potential roost features.

During the daytime survey, bird activity across the site was detected through direct observation and identification of bird calls.

### 3.2.2.5 Approach to Ecological Evaluation and Impact Assessment

#### Site Evaluation Criteria

The criteria used to assess the ecological value (Appendix A) followed the *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009a) and was consistent with the *Guidelines for Ecological Impact Assessment* (IEEM, 2016). Valuation was informed by the conservation status of species from the “Ireland Red List No. 10: Vascular Plants” (Wyse Jackson *et al.*, 2016), the “Birds of Conservation Concern in Ireland” classification (Colhoun & Cummins, 2013), and relevant “Red-lists” for fauna groups (Marnell *et al.*, 2009; Regan *et al.*, 2010; King *et al.*, 2011).

The habitats on the site have been afforded a value according to NRA Guidance in Appendix A. A list of known records of protected species recorded within 2km of the subject site can be found in Appendix B. Information on local bat roosts (according to the Bat Conservation Ireland database) is also listed in Appendix B, however precise locations of these roosts are confidential.

#### Impact Assessment Criteria

In accordance with National Roads Authority’s guidelines (NRA, 2009), impact assessment was only undertaken of “key ecological receptors” (KER’s). These were features within the Zone of Influence

(see Section 1.3.2. for further description) of the development which were “*both of sufficient value to be material in decision making and likely to be affected significantly*” (NRA, 2009). Features qualifying as KERs must as a minimum meet the ecological valuation criteria of “*Local Importance (Higher Value)*” or higher as per the NRA value criteria in Appendix A. Features of lower ecological value are excluded from the impact assessment. Mitigation measures that will be undertaken to reduce the impacts upon SER’s are discussed in Section 1.6.

### 3.2.2.6 Limitations/Data Deficiencies

Observations on breeding bird activity within the subject lands were noted during the walkover visit on an *ad-hoc* basis rather than during a dedicated breeding bird survey. These *ad-hoc* observations were noted during the sub-optimal period for breeding birds. It was not possible to accurately assess the use of the subject lands by over-wintering bird species as the walkover survey was undertaken outside of the optimal survey season and only consisted of one site visit. A bat activity survey was not undertaken at the subject lands. Therefore, whilst there are records of bats in the locality, the baseline levels of bat activity at the subject lands are unknown. In order to ensure that these factors didn’t limit the findings of this assessment, a precautionary approach has been applied to the results of this assessment.

The data for species records held by records centres and statutory bodies (such as National Parks and Wildlife Service) is often provided on an *ad hoc* basis by recorders. These records can only provide an indication of what species might be found in an area; they do not constitute full and complete species lists. Absence of certain species from these sources does not confirm absence of species in the area.

## 3.2.3 DESCRIPTION OF THE EXISTING ENVIRONMENT

### 3.2.3.1 Site Overview

The subject lands are located at an existing inactive rock quarry in Kilmessan, Co. Meath (Grid Reference: 689895, 756969). It is generally comprised of spoil and bare ground, recolonising bare ground, exposed rock, areas of hardstanding, dry meadows and grassy verges and artificial ponds. Calcareous groundwater-fed springs were identified within the subject lands located on top of the cliff-faces within the northern section of the site. The site’s environs are agricultural in nature with small residential dwellings scattered along minor roads nearby. The village of Kilmessan is located c. 715m to the west of the site.

### 3.2.3.2 Zone of Influence

The zone of influence of the proposed development was regarded to be less than 1km from the site perimeter. If the mitigation outlined in this report is adhered to, the presence of the new structures and any effects of their construction upon sensitive ecological receptors will not be perceptible beyond a few hundred metres from the site.

### 3.2.3.3 Designated Areas for Nature Conservation

Natura 2000 sites (also known as European Sites or more commonly as Special Areas of Conservation and Special Protection Areas) are a European-wide ecological network of special areas



of conservation composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, as well as areas for the protection of bird species listed on Annex I of the Directive, regularly occurring populations of migratory species (such as ducks, geese or waders), and areas of international importance for migratory birds. The aim of the network is to aid the long-term survival of Europe's most valuable and threatened species and habitats.

National Heritage Areas (NHAs) are designations under the Wildlife Acts 1976 & 2000 in order to protect habitats, species or geology of national importance. The boundaries of many of the NHAs in Ireland overlap with Natura 2000 sites. Although many NHA designations are not yet fully in force under this legislation (referred to as '*proposed NHAs*' or pNHAs until such time), they are offered protection in the meantime under planning legislation which requires that planning authorities give recognition to their ecological value.<sup>1</sup>

The subject lands are not designated as an SAC, SPA, NHA or pNHA. The closest designated sites are the River Boyne and River Blackwater SAC (002299) and SPA (004232), which are located c. 5.4km north-west of the subject lands. See Table 4 below for further information on these designated sites and their qualifying interests, along with a list of other designated sites located within 15km of the subject lands. See Figure 2 for a map of designated sites located within 15km of the subject lands.

There are four proposed Natural Heritage Areas (pNHAs) located within 15km of the subject lands. See Figure 3 for a map of proposed NHAs located within 15km of the subject lands. The nearest of these nationally important sites is Trim pNHA (001357) which lies c. 2.9km north-east of the subject lands. This is a wetland site on the floodplain of the Boyne and is characterised by its freshwater marsh habitats.

The subject lands is located within the Boyne River catchment. According to the EPA Map Viewer, the Balreask stream flows directly adjacent to the northern boundary of the site for c. 1.6km until it reaches the Skane River. From the confluence of the Balreask stream and the Skane River, the Skane River flows for c. 6.5km until it reaches the River Boyne in Dowdstown. At present, the quarry void is being continuously dewatered by two existing sumps of surface water and groundwater, under a '*licence to discharge trade effluent to waters*' (Register D/L 13/07, Meath County Council). A condition of this licence is the monthly monitoring of water quality and volume from the quarry at the discharge point and the monitoring of local surface water quality upstream and downstream of the quarry. This monitoring will continue during the backfilling phase and for a period of two years thereafter. The total flow of the Balreask Stream is predominantly made up of the water discharge from the quarry (Hydro-Environmental, 2016). Based on data collected as part of a previous planning application (Planning Permission Reference No. TA/8027131, Meath County Council), the Balreask stream is ephemeral and only flows in response to rainfall.

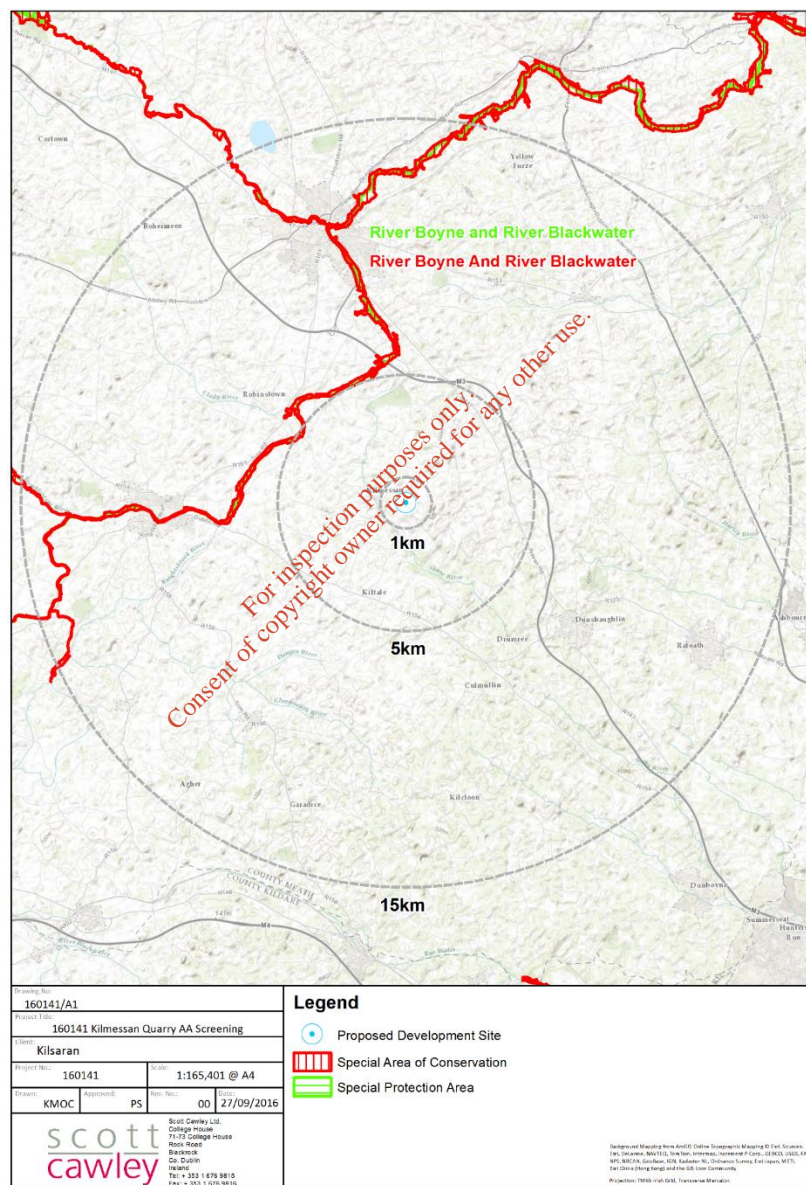
According to this monitoring data, Total Suspended Solids (TSS) and Biochemical Oxygen Demand (BOD) recorded at the discharge point are both significantly below the Freshwater Fish Directive (2006/44/EC) for both Salmonid and Cyprinid waters (i.e. 11.8mg/L TSS on average from 2001–2013 and 1.37 BOD on average from 2001 to 2006). According to the EPA Map Viewer, the water quality

<sup>1</sup> Source: NPWS Website. Available online at <http://www.npws.ie/protectedsites/naturalheritageareasnha/>. Accessed 18<sup>th</sup> January 2017

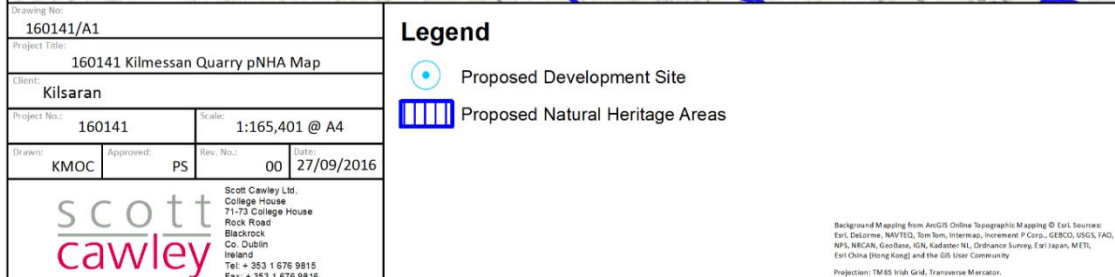


of the Skane river is described as 'Poor', as recorded at both the bridge north-east of Balgeeth monitoring station (located c. 2.3km downstream of the Balreask stream and Skane river confluence) and the Athronan Bridge (located c. 4.6km upstream of the Balreask stream and Skane river confluence). The groundwater body area, in which the subject lands is located, is classified as 'Trim' and is described as '*Productive fissured bedrock*'.

An Appropriate Assessment Screening Report prepared by Scott Cawley, has addressed the potential for significant effects on European Sites, and concluded that none are likely to arise as a result of the proposed development, either alone or in combination with other plans or projects.



**Figure 3.2.2: European designated sites within 1, 5 and 15 km of the proposed development**



**Figure 3.3.3: Locations of proposed Natural Heritage Areas (pNHAs) within 15km of the subject lands**



**Table 3.2.2: Designated sites located within 15km of subject lands.**

<b>Table 2 Analysis of European sites within 15km.</b>		
<b>Site name and code</b>	<b>Distance from Proposed Development (approximate)</b>	<b>Reasons for designation<sup>2</sup> (* = Priority Habitat) (Sourced from NPWS online Conservation Objectives Generic Version 5.0, unless otherwise stated). (pNHA's: taken from the Site Synopses documents (where available) <a href="http://www.npws.ie/protectedsites/">http://www.npws.ie/protectedsites/</a>).</b>
<b>Special Areas of Conservation (SACs)</b>		
River Boyne and River Blackwater SAC (002299)	Located c. 5.4km north-west of the subject lands	<b>Conservation Objectives Generic Version 5.0 (15/08/16)</b> <b>Annex I Habitats:</b> <ul style="list-style-type: none"> <li>Alkaline Fens [7230]</li> <li>Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) [91E0]</li> </ul> <b>Annex II Species:</b> <ul style="list-style-type: none"> <li>Otter <i>Lutra lutra</i> [1355]</li> <li>Salmon <i>Salmo salar</i> [1106]</li> <li>River Lamprey <i>Lampetra fluviatilis</i> [1099]</li> </ul>
<b>Special Protection Areas (SPAs)</b>		
River Boyne and River Blackwater SPA (004232)	Located c. 5.4km north-west of the subject lands	<b>Conservation Objectives Generic Version 5.0 (15/08/16)</b> <ul style="list-style-type: none"> <li>Kingfisher <i>Alcedo atthis</i> [A229]</li> </ul>
<b>Proposed Natural Heritage Areas (pNHAs)</b>		
Trim pNHA (001357)	Located c. 6.6km west of the proposed development	<ul style="list-style-type: none"> <li>Wetland site on the floodplain of the Boyne.</li> <li>Characterised by its freshwater habitats.</li> <li>Good diversity of plant species.</li> <li>Presence of Strawberry Clover (<i>Trifolium fragiferum</i>) - normally only found along the coast.</li> <li>Potential as educational resource due to proximity to town.</li> </ul>
Rathmoyle Esker pNHA (000557)	Located c. 5.2km south of the proposed	<ul style="list-style-type: none"> <li>One of the most easterly wooded eskers in the country.</li> <li>Important from a biological as well as a geomorphological perspective.</li> </ul>

<sup>2</sup> "Qualifying Interests" for SACs and "Special Conservation Interests" for SPAs based on relevant Statutory Instruments for each SPA, and NPWS Conservation Objectives for SACs downloaded from [www.npws.ie](http://www.npws.ie) in January 2017.

	developm ent	
Balrath Woods pNHA (001579)	Located c. 12km north-east of the proposed developm ent	<ul style="list-style-type: none"> <li>Nationally-rare plant Common Wintergreen <i>Pyrola minor</i> occurs at Balrath Woods.</li> <li>These woods are of importance within a county where very few mature woodlands with any degree of natural character are to be found.</li> </ul>
Boyne Woods pNHA (001592)	Located c. 13.4km north of the proposed developm ent	See information above for the River Boyne and River Blackwater SAC (002299)

### 3.2.3.4 Records of Protected, Rare and Other Notable Flora and Fauna Species

#### NPWS & NBDC

The National Parks & Wildlife Service (NPWS) hold records for many protected species in Ireland. The online database was accessed in January 2017 for the study area, which lies within Irish National Grid Square (10km<sup>2</sup>) N85. One rare plant was historically recorded within this 10km of the subject lands, i.e. Red Hemp Nettle *Galeopsis angustifolia*.

The National Biodiversity Data Centre (NBDC) was also accessed during this desk study. Records for protected or notable mammals and amphibians can also be found in the table in Appendix B. A number of protected bird species have been recorded within 2km of the site. Notable mammal records within 2km of the site include Badger *Meles*, Otter *Lutra* and Hedgehog *Erinaceus europaeus*.

#### Bat Conservation Ireland (BCI)

According to Bat Conservation Ireland database (please see Appendix B), there are at least 10 known bat roosts located within 10km of this site. The nearest of which was a Brown Long-eared *Plecotus auritus* roost located c. 3km north-east of the subject lands.

### 3.2.3.5 Field Survey Results

#### Habitat Descriptions

The following habitat types from the Heritage Council's classification system (Fossitt 2000) were identified within the subject lands, as mapped in Appendix C. The habitats recorded within the subject lands (total area of c. 51.44ha) were:

- Dry Meadows and Grassy Verges (GS2)
- Wet Grassland (GS4)
- Hedgerows (WL1)
- Treelines (WL2)
- Scrub (WS1)

- Ornamental/Non-native Shrub (WS3)
- Exposed Calcareous Rock (ER2)
- Exposed Sand, Gravel or Till (ED1)
- Spoil and Bare Ground (ED2)
- Recolonising Bare Ground (ED3)
- Refuse and Other Waste (ED5)
- Buildings and Artificial Surfaces (BL3)
- Other Artificial Lakes and Ponds (FL8)
- Depositing/Lowland Rivers (FW1)
- Drainage Ditches (FW4)
- Calcareous Springs (FP1)

#### *Dry Meadows and Grassy Verges (GS2)*

This habitat type was located along the peripheries of the subject lands, on top and adjacent to the existing earthen berms and next to the watercourses (see Plate 1 below). It was also identified in a mosaic with three other habitat types, which included Wet Grassland, Scrub and Ornamental/Non-native Shrub, which are described below in more detail. Dominant species identified included those typical of this habitat type, such as False Oat-grass *Arrhenatherum elatius*, Yorkshire Fog *Holcus lanatus* and Yellow Vetchling *Lathyrus pratensis*. Other abundant to frequently occurring species included grass species Creeping Bent *Agrostis stolonifera*, Crested Dog's-tail *Cynosurus cristatus* and Downy Oat-grass *Avenula pubescens* and forb species Red Clover *Trifolium pratense*, Ribwort Plantain *Plantago lanceolata*, Tufted Vetch *Vicia cracca*, and Tormential *Potentilla erecta*. Occasional species included Lesser Trefoil *Trifolium dubium*, Harefoot Clover *Trifolium arvense*, and Self-heal *Prunella vulgaris*, while rarer species present included Common Restharrow *Ononis repens*, Thyme-leaved speedwell *Veronica serpyllifolia*, Common Sorrel *Rumex acetosa* and the non-native species invasive species Butterfly-bush *Buddleja davidii*. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.



Plate 1.1: Dry Meadows and Grassy Verges habitat type located along the western earthen berm. Photograph taken facing a northerly direction.



Plate 1.2: Dry Meadows and Grassy Verges habitat type located within the western section of the subject lands. Photograph taken facing a north-westerly direction.

***Plate 1: Examples of Dry Meadows and Grassy Verges Habitat type located within the subject lands.***

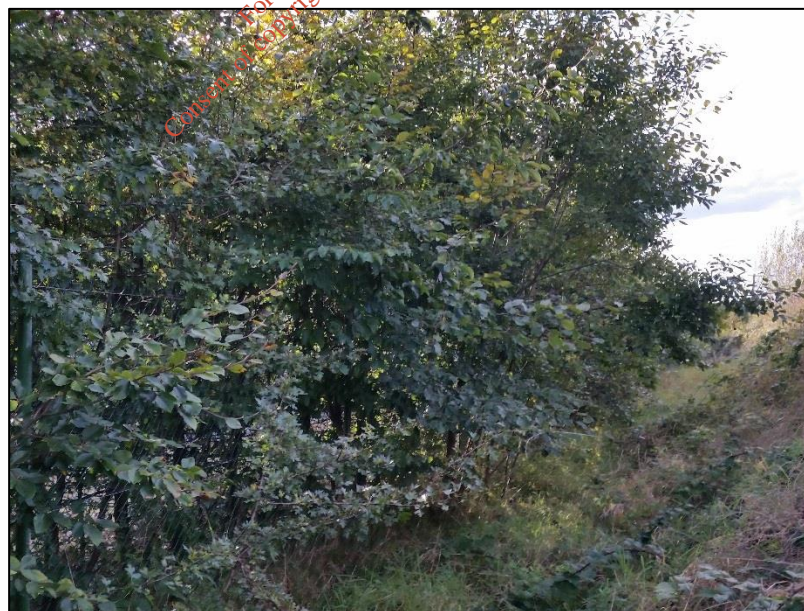


#### *Wet Grassland (GS4)*

This habitat type was identified in a mosaic with Dry Meadows and Grassy Verges along the northern boundary of the subject lands adjacent to the Balreask stream and within the western section of the subject lands. It was also identified in the south-eastern section of the subject lands, in association with a small patch of Willow Carr. Dominant to abundant species present included those characteristic of this damp habitat type, such as Silverweed *Potentilla anserina*, Glaucous Sedge *Carex flacca* and Compact Rush *Juncus conglomeratus*, as well as grass species associated with Dry Meadows and Grassy Verges habitat type described above such as False Oat-grass. Frequent species present included Sharp-flowered Rush *J. acutiflorus* and Field Horsetail *Equisetum arvense*, while occasional species included Marsh Ragwort *Senecio aquaticus*. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.

#### *Hedgerows (WL1)*

This habitat type was recorded on the banks of the stream located along the western boundary of the subject lands and adjacent to a dry drainage ditch located along the southern boundary of the subject lands, north of Tullykane Road (see Plate 2 below). The length of each hedgerow was c. 690m and c. 290m respectively. Dominant species present included Ash *Fraxinus excelsior*, Hawthorn *Crataegus monogyna* and Beech *Fagus sylvatica*, all of which had associated Ivy *Hedera hibernica* growth, while abundant to frequently-occurring species included Blackthorn *Prunus spinosa*, Rose species *Rosa sp.* and Brambles *Rubus fruticosus* agg. The hedgerow located along the western boundary of the subject lands appears both on the 6" 1829-41 and 25" 1897-1913 historic maps<sup>3</sup>, while the other hedgerow appeared to have been planted relatively recently. The young hedgerow located along the southern boundary of the site was evaluated as being of 'Moderate Value', while the other was of 'High Value'. As such, this habitat was evaluated overall as being of 'Local Ecological Importance (Higher Value)'.



**Plate 2: Hedgerow (WL1) located along a dry drainage ditch (FW4) at the southern boundary of the subject lands, north of Tullykane Road. Photograph taken facing a westerly direction.**

<sup>3</sup> OSI Map Viewer. Available at: <http://maps.osi.ie/publicviewer> Accessed 18th January 2017.

### *Treelines (WL2)*

This habitat type was recorded on a bank of an earthen berm directly above an area of hardstanding within the southern section of the subject lands. Dominant species present included Sycamore and Ash, while abundant to frequently occurring species included Willow species *Salix sp*, Rose species and non-native Snowberry *Symphoricarpos albus*. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.

### *Scrub (WS1)*

Patches of Scrub (WS1) habitat type were recorded across the subject lands and in association with two other habitat types Spoil and Bare Ground and Dry Meadows and Grassy Verges. It was dominated by Brambles and Gorse *Ulex gallii*. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.

### *Ornamental/Non-native Shrub (WS3)*

This habitat type was identified in the existing car park. Dominant species present included non-native species *Escollonia sp.* and Laurel species *Prunus sp.*, and non-native invasive species Wall Cotoneaster *horizontalis*. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.

### *Exposed Calcareous Rock (ER2)*

This habitat type consisted of the exposed north-facing cliff face located in the south-eastern section of the quarry floor (see Plate 3 below). There was a limited number of plant species associated with this habitat type. Those identified included species typically found on rock or disturbed/waste ground such as Fern-grass *Catapodium rigidum*, Dandelion *Taraxacum officinale* agg., and Broad-leaved Willowherb *Epilobium montanum*. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.



**Plate 3: Exposed Calcareous Rock (ER2) habitat type of the exposed north-facing cliff face located within the south-eastern section of the subject lands.**

### *Exposed Sand, Gravel or Till (ED1)*

This habitat type was located on the quarry floor adjacent to existing buildings and machinery on site (see Plate 4 below). There were a very limited number of plants associated with this type as it consisted almost entirely of rock and fine gravel, exposed as a result of previous quarrying activities at the subject lands. This habitat was assessed as being of '*Local Ecological Importance (Lower Value)*'.



**Plate 4: Exposed Sand, Gravel or Till (ED1) habitat type. Photograph taken facing an easterly direction.**

#### *Spoil and Bare Ground (ED2)*

This was the most common habitat type located within the subject lands (see Plate 5 below). It was identified on the quarry floor, on the cliff tops and partially on the earthen berms located in the eastern section of the subject lands. There were a limited number of plant species associated with this habitat type. Those present included *Weld Reseda luteola*, Colt's-foot and Blue Fleabane *Erigeron acris*, all of which are typical of disturbed ground. This habitat type was also found in association with Scrub (WS1) at the existing entrance to the quarry floor, where there was a large, steep pile of rubble with Brambles and some scattered trees, mainly Ash and Sycamore, growing throughout.

Blue Fleabane is listed on the vascular plant Red List for Ireland (Wyse Jackson et al, 2016). According to Parnell & Curtis (2012), it is a rare species that is chiefly found in the centre and south-east of the country. It is categorised as being of '*Least Concern*' (Wyse Jackson et al., 2016) and as a result is considered to be '*a taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in the category*' (Wyse Jackson et al., 2016). It was previously described as a '*Vulnerable*' species in Curtis & McGough (2005). As such, this habitat was assessed as being of '*Local Ecological Importance (Higher Value)*'.





**Plate 5: Spoil and Bare Ground (ED2) habitat type located within quarry floor of the subject lands. Photograph taken facing a north-easterly direction.**

#### *Recolonising Bare Ground (ED3)*

This was a common habitat type located within the subject lands (see Plate 6 below). It was identified mainly on the earthen berms located in the northern, eastern and southern sections of the subject lands. There were also patches of this habitat type noted on a number of relatively small sand heaps located on the quarry floor (see Plate 6 below). A variety of different plant species with varying abundance levels were noted. These included those typical of disturbed, waste-ground such as Weld, Colt's-foot, Scarlet Pimpernel *Anagallis arvensis*, Blue Fleabane, Common Centaury *Centaureum erythraea* and non-native invasive species Winter Heliotrope *Petasites fragrans*. Other dominant to abundant species present included Yorkshire Fog, Herb Robert *Geranium robertianum*, Smooth Sowthistle *Sonchus oleraceus* and Daisy *Bellis perennis*. Occasionally occurring species included Broad-leaved Willowherb *Epilobium montanum* and Black Medick *Medicago lupulina*, while rarer species identified were Oxeye Daisy *Leucanthemum vulgare*, Autumn Hawkbit *Leontodon autumnalis* and the non-native invasive species Butterfly-bush. Species only identified growing on the small sand heaps included those typical of disturbed ground such as Beet *Beta vulgaris*, Scentless Mayweed *Tripleurospermum inodorum*, Spike-rush species *Eleocharis* sp., Restharrow *Ononis repens*, Procumbent Pearlwort *Sagina procumbens* and Bristly Oxtongue *Helminthotheca echioides*. One unidentified Orchid species *Dactylorhiza* sp. was noted growing in this habitat type.

Blue Fleabane and Bristly Oxtongue are both listed on the vascular plant Red List for Ireland (Wyse Jackson et al, 2016). They are categorised as being of 'Least Concern' (Wyse Jackson et al., 2016) and as a result are considered to be 'a taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in the category' (Wyse Jackson et al., 2016). Whilst Blue Fleabane was previously described as a 'Vulnerable' species, Bristly Oxtongue was previously described as being of 'Least Concern' (Curtis & McGough, 2005). According to Parnell & Curtis (2012), Bristly Oxtongue is very rare and is mainly found in the eastern half of the country. As such, this habitat was assessed as being of 'Local Ecological Importance (Higher Value)'. This habitat was assessed as being of 'Local Ecological Importance (Higher Value)'.



**Plate 6.1: Recolonising Bare Ground (ED3) habitat type identified on top of an earthen berm located in the northern section of the subject lands. Photograph taken facing an easterly direction.**



**Plate 6.2: Recolonising Bare Ground (ED3) habitat type on sand heaps located within the northern section of the quarry floor. Photograph taken facing a south-westerly direction.**

***Plate 6: Examples of Recolonising Bare Ground (ED3) habitat type located within the subject lands.***

***Refuse and Other Waste (ED5)***

This habitat type was limited to a few relatively small patches located in the north-western section of the subject lands. It consisted of materials associated with the previous quarrying activity. There were



no plant species present. This habitat was assessed as being of '*Local Ecological Importance (Lower Value)*'.

#### *Buildings and Artificial Surfaces (BL3)*

This habitat type consisted of a number of existing disused buildings and services, which included a workshop, soil store, weighbridge, wheelwash, pre-fabricated offices, canteen and WC, ESB substation and switch house, a paved entrance roadway and other areas of hardstanding (see Plate 7 below). This habitat was assessed as being of '*Local Ecological Importance (Lower Value)*'.



**Plate 7: Buildings and Artificial Surfaces (BL3) habitat type located along the southern boundary of the subject lands, which includes disused prefabricated buildings and areas of hardstanding. Photograph taken facing an easterly direction.**

#### *Other Artificial Lakes and Ponds (FL8)*

This habitat type consisted of: a large artificial pond (c. 11.6ha in area) located in the eastern section of the quarry floor that was created as a result of rainfall collecting in the quarry floor; two sumps located in the centre of the quarry floor; and, a settlement pond located in the north-western section of the subject lands south of the Balreask Stream (see Plate 8 below). There were a limited number of plant species associated with this habitat type. Those noted included Almond Willow *Salix triandra*, Yorkshire Fog, Duckweed species *Lemna sp.* and an unidentified charophyte species *Nitella sp.* This habitat was assessed as being of '*Local Ecological Importance (Lower Value)*'.





Plate 8.1: Artificial pond located in the eastern section of the quarry floor. Photograph taken facing an easterly direction.



Plate 8.2: Sump located within the centre of the quarry floor. Photograph taken facing a south-easterly direction.

**Plate 8: Examples of Other Artificial Lakes and Ponds (FL8) habitat type located within the subject lands.**

*Depositing/Lowland Rivers (FW2)*

This habitat type consisted of both the Balreask stream located along the northern and eastern boundaries of the subject lands (c. 1km in length) and an unnamed stream located along the western boundary of the subject lands (c. 614m in length), adjacent to the hedgerow habitat type described above. The Balreask stream had steep banks that were densely vegetated (see Plate 9 below). The stream itself was dominated by Fool's-water-cress *Apium nodiflorum*, while those identified growing on the banks of the Balreask stream included plants typically found on damp marshy ground such as Meadowsweet *Filipendula ulmaria*, Iris Yellow *Iris pseudacorus*, Common Reed *Phragmites australis*, Water Mint *Mentha aquatica* and Square-stalked St. John's-wort *Hypericum tetrapterum*. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.



**Plate 9: Eroding/Upland River (FW1), referred to as Balreask Stream on the EPA Envision Map Viewer, located along the northern boundary of the site.**

#### Drainage Ditches (FW4)

There were three Drainage Ditches located within the subject lands (see Plate 10 below). One was located within the eastern section of the subject lands and was surrounded by recolonising bare ground habitat type described above. It is c. 320m in length, c. 1m wide and between c. 5-10cm deep. It appeared to ultimately drain to the Balreask stream in the east. Another drainage ditch (c. 290m in length) was located along the southern boundary of the site, surrounded by a mosaic of dry meadows and grassy verges and scrub habitat types to the north and a hedgerow to the south. This ditch was dry on the day of the survey. Another drainage ditch (c. 50m in length) was identified within the north-western section of the subject lands, connecting the existing settlement pond to the Balreask stream as part of the existing surface water management system in place at the quarry. Plant species observed growing within and directly adjacent to the drainage ditch located in the eastern section included typical species of damp conditions such as Bulrush species *Typha sp.*, Square-stalked St. John's-wort, an unidentified *Chara* species and Sharp-flowered Rush. This habitat was assessed as being of 'Local Ecological Importance (Lower Value)'.



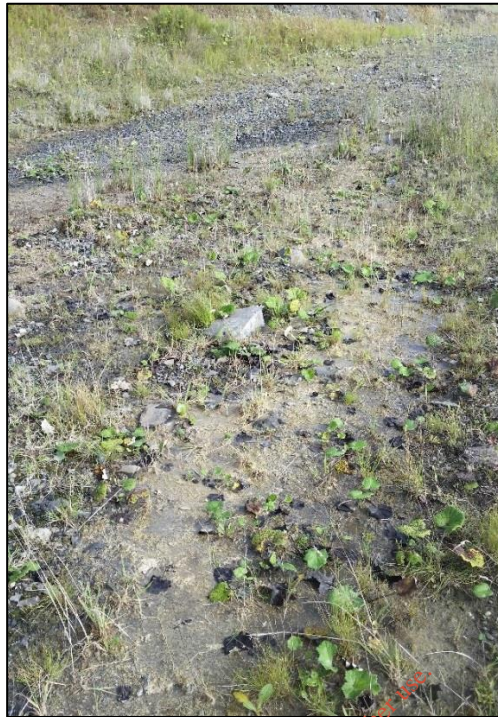
**Plate 10: Drainage ditch (FW4) located within the eastern section of the subject lands, surrounded by recolonising bare ground (ED3) habitat type. Photograph taken facing a southerly direction.**

*Calcareous Springs (FP1)*

This habitat type was identified on the northern, eastern and southern earth berms adjacent to Recolonising Bare Ground (ED3) habitat type. One of these springs, located on the northern berm, had associated extensive tufa formation (see Plate 11). Many of the plant species found growing within this habitat type were also associated with Recolonising Bare Ground (ED3) habitat type, such as Colt's-foot and Yorkshire Fog. Other species included Creeping Bent and Soft Rush *Juncus effusus*, the latter of which is a negative indicator species of the Annex I habitat (Lyons & Kelly, 2016).

In the absence of a detailed botanical study, it is not possible to definitively state whether or not this spring with associated tufa formation is an Annex I Priority Habitat '*Petrifying Springs with Tufa Formation [7220]*'; however it is considered unlikely due to the lack of positive indicator plant species noted during the site walkover (Lyons & Kelly, 2016). It is highly likely that these springs were created as a consequence of past quarrying activities and as such are artificial in origin. Considering this and in line with a precautionary approach, this habitat was assessed as being of '*Local Ecological Importance (Higher Value)*'.





**Plate 11: Drainage Ditch (FW4) located within the eastern section of the subject lands, either side of Recolonising bare ground (ED3) habitat type. Photograph taken facing a southerly direction.**

#### Rare Flora

No protected flora were identified within the subject lands. Two rare flora species listed in the Irish Red Data Book (Wyse Jackson, 2016) were recorded during the site walkover survey, i.e. Blue Fleabane and Bristly Oxtongue. The conservation status of these species are considered to be of 'Least Concern' (Wyse Jackson, 2016).

#### Invasive Flora

Three invasive species were recorded within the subject lands, as described in Section 1.3.5 above. These included Wall Cotoneaster, Butterfly-bush and Winter Heliotrope, the former two of which are considered to be 'Medium Risk' invasive species, while the latter species is considered to be of 'Low Risk' (Kelly, J. et al., 2013).

#### Fauna

A Red fox's *Vulpes vulpes* den was noted in the small sand heaps located in the northern section of the quarry floor. Footprints and feeding remains of fox were noted adjacent to the entrances of the den. A number of small mammal paths, most likely created by Rabbit *Oryctolagus cuniculus* or Red fox, were noted along the southern boundary and within the western section of Dry Meadows and Grassy Verges. No evidence of badgers was noted during the survey.

Crevices in the cliff face could possibly be of use for bats but due to the time of year and lack of safe access to these areas, the use of such potential roost sites could not be confirmed. A precautionary approach has therefore been applied to the presence of these protected species.

Only six bird species were recorded within the boundaries of the subject lands; one of which is Red-listed birds (i.e. Meadow Pipit *Anthus pratensis*), another is Amber-listed (i.e. Lesser Black-backed Gull *Larus fuscus*), while the remaining four are Green-listed birds (i.e. Blackbird *Turdus merula*, Hooded

Crow *Corvus cornix*, Rook *Corvus frugilegus* and Wren *Troglodytes troglodytes*), as per the *Birds of Conservation Concern in Ireland* (Colhoun & Cummings 2013). A flock of c. 40 Lesser Black-backed Gulls was observed flying out of and into the quarry floor and loafing in the pond. Sand Martin *Riparia riparia* burrows (over 100 entrances) were noted in steep gravel banks located in the western section of the quarry (see Plate 12 below). The scrub habitat and scattered trees located along the within the subject lands are all considered to be suitable breeding passerine bird habitat.



**Plate 12: Sand martin burrows (as indicated by red arrow) present in the gravel pits located within the western section of the quarry.**

#### 3.2.3.6 Site Evaluation

Table 4 provides an ecological evaluation of all identified Key Ecological Receptors (KER's) at this particular site. KER's have been identified as at risk of potentially significant impacts via a source-pathway-receptor link. Impact significance here is defined as producing a change in conservation status at a specified geographic level in line with NRA and CIEEM guidance. KER's are valued as Local (high) or above per the criteria set out in Appendix A, which takes into consideration legal protection, conservation status and local abundance of ecological features.

Table 4 Ecological Evaluation of Key Ecological Receptors in Relation to the Subject Site		
Habitat / Species	Highest Ecological Valuation Level	Key Ecological Receptor?
<b>Designated Sites</b>		
SACs and SPAs	International	Yes
pNHAs	National	Yes
<b>Protected Species</b>		
Bat species (Roosting/Foraging/Commuting)	Local (High)	Yes
Bird species	Local (High)	Yes
<b>Habitats &amp; Flora</b>		
Blue Fleabane <i>Erigeron acris</i>	Local (High)	Yes

Table 4 Ecological Evaluation of Key Ecological Receptors in Relation to the Subject Site		
Habitat / Species	Highest Ecological Valuation Level	Key Ecological Receptor?
<b>Bristly Oxtongue <i>Helminthotheca echioides</i></b>	<b>Local (High)</b>	<b>Yes</b>
Dry Meadows and Grassy Verges (GS2)	Local (Low)	No
Wet Grassland (GS4)	Local (Low)	No
Hedgerows (WL1)	Local (High)	No
Treelines (WL2)	Local (Low)	No
Scrub (WS1)	Local (Low)	No
Ornamental/Non-native Shrub (WS3)	Local (Low)	No
Exposed Calcareous Rock (ER2)	Local (Low)	No
Exposed Sand, Gravel or Till (ED1)	Local (Low)	No
Spoil and Bare Ground (ED2)	Local (Low)	Yes
Recolonising Bare Ground (ED3)	Local (Low)	Yes
Refuse and Other Waste (ED5)	Local (Low)	No
Buildings and Artificial Surfaces (BL3)	Local (Low)	No
Other Artificial Lakes and Ponds (FL8)	Local (Low)	No
Depositing/Lowland Rivers (FW2)	Local (Low)	No
Drainage Ditches (FW4)	Local (Low)	No
<b>Calcareous Springs (FP1)</b>	<b>Local (High)</b>	<b>Yes</b>

### 3.2.4 Characteristics of the proposed Development

#### 3.2.4.1 Brief Description of the Project

The proposed development comprises of backfilling c. 46.5ha of the current quarry void with inert soil and stone (EU Waste Class 17 05 04<sup>4</sup>) under a Waste License, which will be applied for from the Environmental Protection Agency. The backfilling will be undertaken at a rate of c. 400,000 tonnes per annum over a 14 year period and a total of c. 5.6 million tonnes of inert soil and stone will be

<sup>4</sup> Defined as 'soil and stones other than those mentioned in 17 05 03', i.e. which are 'soil and stones containing hazardous substances' (EPA, 2015). The definition of inert waste from Article 2 of the Landfill Directive is as follows: 'waste that it does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater'. Therefore, no harmful/toxic contaminants are expected to be present.



imported to the site over that period. A small quantity of concrete/bricks/tiles and ceramics/mixed construction & demolition material will also be accepted to be used to construct internal roads to facilitate the placing of the soil and stones. A small quantity of concrete (EWC Code 17 01 01<sup>5</sup>) will also be used to construct internal roads into the proposed community park 'The Skane Valley Amenity Park', which will be located in the south-western section of the proposed site. Temporary haul roads entering the existing quarry will also be constructed with materials categorised as EWC Code 17 01 01, 17 01 02, 17 01 03 and 17 01 07<sup>6</sup>). The proposed park will be for local amenity use and will include a playground, a playing pitch, other green areas, vehicular entrance, paved car parks and paved walk ways throughout. In the event where a properly constituted body does not come forward to take ownership of the park prior to construction, within a predefined period, the area will remain undeveloped and will be reclaimed to an agricultural use in keeping with the balance of the reclaimed quarry.

The quarry void is currently being continuously dewatered by two existing sumps of surface water and groundwater, which are then discharged into the Balreask Stream under a 'licence to discharge trade effluent to waters' (Register D/L 13/07, Meath County Council). As part of the proposed development, these sumps will be upgraded and all existing quarry floor drains that feed into the sumps will be blocked in order to ensure that during the backfilling process only groundwater will enter the sumps. Surface water drains will be constructed to divert stormwater into a series of constructed settlement ponds for removal of suspended sediments. Settlement ponds will be constructed from low permeability imported soils. As the backfilling operations raise the ground in the quarry void, new settlement ponds will be constructed. Treated surface water from the settlement ponds will be pumped to the existing final settlement pond, oil interceptor and v-notch weir before discharging via the outflow channel. It will then be discharged to the Balreask Stream. (Hydro-Environmental Services, 2016). Once the backfilling is completed, the groundwater level will be allowed to recover to its natural level. It is estimated that the final fill level will be at least c. 8-10m above the recovered groundwater level (Hydro-Environmental Services, 2016)

There is an existing wastewater treatment system located at the subject lands, which treats foul effluent arising from the site office via a secondary treatment system and percolation area and then discharges it to groundwater. The predicted hydraulic loading (i.e. 0.3m<sup>3</sup>/day) during the construction phase and proposed treatment will ensure that there are no potential impacts on groundwater or surface water quality arising from foul effluent (Hydro-Environmental Services, 2016).

Once the backfilling process has been completed, the area will be seeded for the establishment of a grassland. This will be completed as soon as possible in order to avoid erosion.

As part of the proposed monitoring plan, the existing network of wells at the subject lands will be monitored quarterly for groundwater levels and quality to demonstrate that any proposed future

<sup>5</sup> Defined as 'concrete' (EPA, 2015).

<sup>6</sup> Defined as 'concrete' (EPA, 2015).

<sup>6</sup> Defined as '17 01 02 bricks, 17 01 03 tiles and ceramics and 17 01 07 mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06' (EPA, 2015)

backfilling is not impacting on local groundwater quality. It is proposed that the current monitoring of surface water will be continued during the backfilling phase and for a period of two years hereafter.

### 3.2.5 Potential Impacts of the Development

As per the relevant guidelines, likely significant impacts have only been assessed for Key Ecological Receptors, as listed in the table above. An impact is considered to be ecologically significant if it is predicted to affect the integrity or conservation status of a Key Ecological Receptor at a specified geographical scale. All impacts are described in the absence of mitigation.

In addition to the above guidance, the EPA's (2002) definitions of duration have been employed as follows:

- Temporary: up to 1 year;
- Short-term: from 1-7 years;
- Medium-term: 7-15 years;
- Long-term: 15-60 years; and,
- Permanent: over 60 years.

#### 3.2.5.1 Do-Nothing Scenario

In event where the proposed development application to backfill and restore the quarry is unsuccessful, Kilsaran International Concrete Ltd. intends to recommence blasting and quarrying at the site. This would result in an increase in level of disturbance to the existing habitats and fauna that utilise the site, which would likely result in negative impacts.

#### 3.2.5.2 Potential Impacts on Designated Areas for Nature Conservation

There are no designated areas for nature conservation directly impacted by the proposed development. The Balreask stream runs along the northern site boundary, while an unnamed stream flows along the western site boundary. There are three drainage ditches located within the site, two of which were wet on the day of the survey. These water features have the potential to carry surface waters generated during construction and operation into the local surface water drainage system which discharges into the River Boyne.

It is our professional opinion that there will be no likelihood of significant effects on any European sites during the construction or operation of the proposed development, in combination with other plans or projects. This judgement was reached on the basis that:

- According to the Site Synopsis for the River Boyne and River Blackwater SAC (002299) (NPWS, 2014), the main areas of the Annex I habitat Alkaline Fens [7230] are located in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. These three lakes are located in a different groundwater to that of the subject lands and as such are not hydrogeologically connected to the proposed development body (i.e. Athboy in the case of Lough Shesk and Freehan Lough and GWSTE Newtown Lough Fen SAC 002299)

- Any unlikely pollution event during backfilling would not be of such a magnitude that it could have significant adverse effects on the Qualifying Interest/Special Conservation Interests of the European sites. This is due to the following specific measures:
  - Sourcing material that is proven to be inert prior to transport to the Tullykane site;
  - Pre-agreed source sites for inert material ensuring; no pollutants, unauthorised material, invasive species.
  - The site will operated under an Environmental Management System
  - All required pollution prevention measures will be implemented at the site.
  - The operator will prepare and implement an Emergency response procedure.
  - The operator will complete environmental monitoring, including local groundwater and surface water monitoring.
  - A phased restoration of the site will be implemented, and end with the closure of site.
  - The operator will have a documented waste recording procedure for all material entering the site.
  - No unauthorised dumping of waste will be allowed at the site.
- The significant distance of the subject lands from the European site (i.e. c. 5.4km) and significant dilution and mixing within the receiving waters

The Appropriate Assessment Screening Report which accompanies the planning application for this proposed development has assessed the potential for likely significant effects on European Sites. It has identified that a number of European Sites lie within the potential zone of influence of water discharges from the proposed development. However, following evaluation and a detailed analysis, no European Sites are deemed to be at risk of likely significant effects from construction or operation of the proposed development for the reasons stated above.

Based on the information provided above and in applying the precautionary principle it is the professional opinion of the authors of this report that it is possible to rule out likely significant effects on European Sites arising from the proposed development either alone or in combination with other plans or projects. Full details of this assessment and the conclusion reached are provided in the Appropriate Assessment Screening Report.

The subject lands are not designated as either pNHA or NHA. There is only one nationally designated site located within 5km of the subject lands, which is Trim pNHA (001357). No potential impacts on this pNHA are predicted due to the same reasons outlined above for European Sites.

### 3.2.5.3 Construction Phase

#### Flora & Habitats

##### *Rare Plant Species*

The proposed infilling has the potential to result in the loss of the two rare plant species Blue Fleabane and Bristly Oxtongue, as it would result in the direct loss of the habitat types in which these plant species found - i.e. in case of Blue Fleabane, Spoil and Bare Ground (ED2) and Recolonising Bare

Ground (ED3) and in the case of Bristly Oxtongue (ED3) Recolonising Bare Ground. This would have a significant negative impact on both plant species at a local geographic scale.

#### *Calcareous Springs (FP1)*

The proposed infilling has the potential to result in the loss of the Calcareous Springs (FP1) habitat located within the subject lands. In the case of the spring with associated tufa formation, this would result in a significant negative impact on the habitat type at a local geographic scale.

### Protected Fauna

#### *Bats*

It is possible that bats may be using the cliff face within the subject lands to roost in. It is also possible that bats may use the subject lands (especially the more vegetated areas) as foraging and commuting habitat. Following the precautionary approach, the proposed backfilling of the existing quarry, which would result in the blocking of the cliff face, may have the potential to result in a negative impact on roosting bats, if present. Temporary lighting required during the infilling process could illuminate previously unlit foraging and commuting habitat making it unsuitable for bats. All proposed lighting units used during the backfilling process will be switched off at the end of the working day (i.e. at c. 6pm). The existing pole mounted lighting will remain at the existing quarry entrance/car park. This lighting is on sensors and switches on during hours of darkness. Although, some bat species such as Leisler's bat may tolerate some lighting of feeding areas, other bat species for example Whiskered bat, are considered to be adversely affected by strong lighting. Therefore, the overall potential impact on bats is predicted to be significant at the local geographic scale.

#### *Breeding Birds*

If vegetation clearance of trees and shrubs located across the subject lands is undertaken during the breeding bird season (i.e. from the 1<sup>st</sup> March to the 31<sup>st</sup> August), it could have a potential negative impact on breeding birds at the local geographic scale.

Noise, vibration and increased human presence associated with the construction of the proposed development is likely to result in a disturbance impact to local breeding bird populations during the bird breeding season and has the potential to result in reduced breeding success of birds in suitable habitats adjacent to the construction zone.

Following implementation of measures outlined in the Noise Impact Assessment (RME Environmental, 2017), the predicted noise emissions from the proposed backfilling process will be below recommended criteria levels as set by the EPA and will be contained within the proposed development site.

If the infilling of the quarry floor takes place from April to September, it could result in the direct mortality of Sand Martins that may be utilising their existing burrows within the subject lands. Then infilling of the quarry floor would result in the removal of existing suitable breeding habitat for Sand Martin. In consideration of their Amber status (Colhoun & Cummins, 2013) and the records of Sand Martins in the locality, it is anticipated that these potential scenarios would result in a significant impact on Sand Martins at a local geographic scale.

### 3.2.5.4 Operational Phase

#### Habitats

There is potential for biodiversity gains in the locality as part of the proposed remediation works. Planting wild bird seed or nectar mixes or other cover crops could benefit birds and other wildlife,

providing food for pollinating insects during the summer months and for wild birds through the winter. Therefore, the operational impact of this development on habitats is deemed to be a potential positive impact at the local geographic scale.

### Protected Fauna

#### *Bats*

As no lighting is proposed for the development, there are no predicted lighting impacts on local bats in the area.

The planting of native trees and shrubs as part of the proposed park may have positive impacts on bats in the locality, as it will provide them with additional foraging habitat, when compared to existing grassland dominated habitat located within this area of the subject lands.

#### *Breeding Birds*

The planting of native trees and shrubs as part of the proposed park may have positive impacts on birds in the locality, as it will provide them with additional suitable nesting and foraging habitat, when compared to the existing grassland dominated habitat located within this area of the subject lands.

### 3.2.5.5 Cumulative Impacts

Proposed and permitted development in the area has the potential to act in-combination with the proposed development upon sensitive ecological receptors. The most likely of these potential impacts are the combined construction noise impacts and additional drainage from developments in the vicinity.

There are no predicted significant effects on any European sites during the construction or operation of the proposed development, in combination with other plans or projects. This judgement was reached on the basis that:

- It is an objective of the Meath County Development Plan 2013-2019 that all new developments within County Meath will include the use of Sustainable Urban Drainage Systems to minimise surface water discharges and that surface water runoff is adequately treated prior to discharge to the existing local drainage network;
- According to the site synopsis for the River Boyne and River Blackwater SAC (002299) (NPWS, 2014), the main areas of the Annex I habitat Alkaline Fens [7230] are located in the vicinity of Lough Shesk, Freehan Lough and Newtown Lough. These three lakes are located in a different groundwater to that of the subject lands and as such are not hydrogeologically connected to the proposed development body (i.e. Athboy in the case of Lough Shesk and Freehan Lough and GWSTE Newtown Lough Fen SAC 002299).
- Any unlikely pollution event during construction would not be of such a magnitude that it could have significant adverse effects on the Qualifying Interest/Special Conservation Interests of the European sites; and, The significant distance of the subject lands from the European site and significant dilution and mixing within the receiving waters.

The potential cumulative impacts upon local flora and fauna include loss of foraging, resting and commuting habitat and construction noise. Habitat loss at this site, and in combination with development in the environs, is considered to be significant at a local geographic scale.

There are a number of proposed projects that have been granted planning permission within the local vicinity which could potentially act in combination with the proposed development. However, these



applications are mainly for small residential developments and alterations to existing buildings and as such no cumulative impact is predicted.

### 3.2.6 Avoidance, Remedial or Reductive Measures

All of the mitigation measures described in this section are in accordance with current best practice guidance, as detailed in Section 3.2. Mitigation measures are proposed in relation to those receptors where the predicted impact significance can be further reduced by their implementation.

#### 3.2.6.1 Construction Phase

##### Mitigation Measure 1: Measures to reduce the impacts on rare plant species

It is proposed that the two rare plant species Blue Fleabane and Bristle Oxtongue, currently growing within the proposed development site, will be translocated to areas of suitable land prior to works commencing. These areas of land will contain habitat conditions suitable for the plants to successfully grow in and will either be located adjacent to the proposed community park or improved grassland. It is recommended that a site specific translocation plan is prepared in agreement with the local authority and implemented prior to works commencing. This plan will outline how these plants will be translocated from the site to the new areas of land and will include details on:

- how the existing topsoils and subsoils from the earthen berms, which contain the seed bank, will be removed, stored and reinstated;
- how the possible removal and storage of individual plants and their seeds will be carried out, if deemed necessary;
- how the proposed new locations for the two rare species will be prepared to ensure that they contain suitable habitat conditions for the plants to successfully grown in; and,
- how the site will be monitored after the translocation is completed.

##### Mitigation Measure 2: Measures to reduce the impacts of invasive species

The invasive species Wall Cotoneaster, Butterfly-bush and Winter Heliotrope will be appropriately managed (aiming for eradication) prior to any vegetation clearance works occurring along the hedgerow where these species were identified.

Planting on site will avoid using non-native, invasive species such as Rhododendron (*Rhododendron ponticum*), Japanese Knotweed (*Fallopia japonica*) and Cherry laurel (*Prunus laurocerasus*) or other plants listed on:

<http://invasivespeciesireland.com/background/legislation/ireland/third-schedule-part-1-plants/>

##### Mitigation Measure 3: Measures to reduce the potential risk of impacts to water quality in receiving waterbodies

The following measures will be strictly adhered onsite in order to reduce the likelihood of an accidental pollution event at the site occurring (Hydro-Environmental, 2016):

- Sourcing material that is proven to be inert prior to transport to the Tullykane site;
- Pre-agreed source sites for inert material ensuring; no pollutants, unauthorised material, invasive species.
- The site will operated under an Environmental Management System

- All required pollution prevention measures will be implemented at the site.
- The operator will prepare and implement an Emergency response procedure.
- The operator will complete environmental monitoring, including local groundwater and surface water monitoring.
- A phased restoration of the site will be implemented, and end with the closure of site.
- The operator will have a documented waste recording procedure for all material entering the site.
- No unauthorised dumping of waste will be allowed at the site.

#### Mitigation Measure 4: Measures to Reduce the Impact on Bats

It is recommended that as a precautionary approach that 3 no. bat activity surveys are undertaken by a suitably qualified bat ecologist in the period May-September prior to works commencing in order to establish the level of bat activity within the subject lands and to ascertain whether or not bats are roosting in any cracks and crevices of the cliff face. If bats are found to be roosting in crevices in the cliff face, a derogation licence may have to be obtained and specific mitigation measures implemented prior to works commencing.

All temporary lighting at the subject lands will be installed so as to minimise light spill onto adjoining tree or scrub habitats. The lighting design for the proposed works should follow guidance outlined in '*Bats & Lighting – Guidance Notes for: Planners, engineers, architects and developers*' (Bat Conservation Ireland, 2010) and '*Bats and Lighting in the UK. Bats and the Built Environment Series*' BCT (2008). It should ensure that it takes into account any potential foraging areas for bats, such as hedgerows, treelines, scrub and watercourses.

#### Mitigation Measure 5: Measures to Reduce the Impact on Birds

Clearance of woody vegetation will be undertaken outside the breeding bird season (i.e. 1<sup>st</sup> March to 31<sup>st</sup> August) to avoid any potential impacts on nesting birds.

Infilling works at the gravel pits where the existing Sand Martin colony is located will be undertaken outside their breeding season (i.e. April to September, Ferguson-Lees *et al.*, 2011) in order to avoid any potential risk of direct mortality of Sand Martins.

#### Mitigation Measure 6: Measures to Enhance Biodiversity

Native tree and shrub species will be planted within the proposed park. It is recommended that native Irish wildflower mixes, containing a diverse mixture of flower and grass species, are sown in the place of improved grassland type seed mixes, where possible. This will result in positive impacts on local biodiversity with ecological benefits for invertebrates in the locality.

### 3.2.7 Predicted Residual Impact

#### Habitat Loss – Calcareous Springs (FP1)

The proposed development will result in the loss of the Calcareous Springs habitat type. In the case of the calcareous spring with associated tufa formation, this is predicted to be a significant residual impact on this habitat type at a local level. This may act in-combination with habitat loss arising from other projects in the locality.

#### Sand Martins

The proposed development will result in the loss of existing suitable breeding habitat for Sand Martin. This is predicted to be a significant negative residual impact on this species at a local level.

#### Habitat Enhancement

There will be some positive impacts on local biodiversity as a consequence of the planting of native tree and shrub species and Irish wildflower mixes.

### 3.8 References

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**Meath County Council (2015)** *Draft Meath Heritage Plan 2015-2020*

**Meath County Council (2015)** *Draft Meath Biodiversity plan 2015-2020*

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**National Roads Authority (2010)** *Guidelines on the Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads*. National Roads Authority.

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**Smith, G.F., O'Donoghue, P., O'Hora, K. & Delaney, E. (2011)** *Best Practice Guidance for Habitat Survey and Mapping*. The Heritage Council, Kilkenny, Ireland.

**Wyse Jackson, M., Fitzpatrick, Ú, Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. (2016)** *Ireland Red List No. 10: Vascular Plants*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

### 3.9 Appendices:

This document should be read in association with the Ecological Assessment Report as produced by Scott Cawley on 25/01/2017. The following appendices will be contained within the report:

APPENDIX A: CRITERIA FOR ECOLOGICAL EVALUATION

APPENDIX B: SPECIES RECORDS

APPENDIX C: HABITAT MAP (REFER TO SECTION 3.2.3.5 FOR THE CORRESPONDING FOSSITT TITLES FOR EACH CODE LISTED BELOW)

APPENDIX D: FLORA SPECIES LIST

## 3.3 Soils and Geology

### 3.2.1 Introduction

All projects and developments that require an EIS *by virtue of their nature, size and location*, have the potential to have an impact on the environment. This section of the EIS has been compiled in order to establish both the regional and local geological setting of the proposed development with respect to the soil, subsoil and geological bedrock environment. The section was prepared following a desktop study, which included research of relevant maps and data on the Geological Survey of Ireland (GSI) online mapping website (GSI 2014), and on the Environmental Protection Agency (EPA) Envision geoportal website (EPA 2104).

Additional documents that were researched comprised geological maps and bulletins published by the GSI (GSI 2001), prior Planning & Environmental Reports for the Tullykane Quarry, the Geology of Ireland monograph edited by Holland & Sanders (2009), as well as other miscellaneous publications. The available information is considered sufficient to adequately characterise the geological environment of the site and its environs. The potential impact on the geological environment resulting from the proposed development is assessed and possible mitigation measures proposed to reduce any significant impacts.

### 3.3.2 Study Method

No fieldwork other than a site walkover was undertaken as part of this geological assessment. The desktop study was undertaken to compile, review and interpret available information, data and literature pertaining to the natural environment of the site, its immediate environs and regional setting. The desktop study included the following:

1. Examination of physiographic and other maps, and aerial photography (e.g., Google Images (Google 2014), and EPA Ortho Photos 1995 to 2005: (EPA 2014));
2. Examination of the GSI datasets and maps pertaining to geological bedrock, soil and subsoil maps (GSI 2014);
3. Examination of EPA soil and subsoil maps (EPA 2014);
4. Observations made during the site walkover.

In the preparation of this geological assessment, all available regional and site specific information was compiled, assessed and interpreted. The geological maps and literature provide the regional geological context of the site, whilst prior Planning and Environmental Reports provide site-specific information. The geological assessment of the site is considered sufficiently detailed to adequately characterise the geological setting of the site. This section was prepared with consideration to the guidelines and recommendations set out in 'Guidelines on Information to be contained in



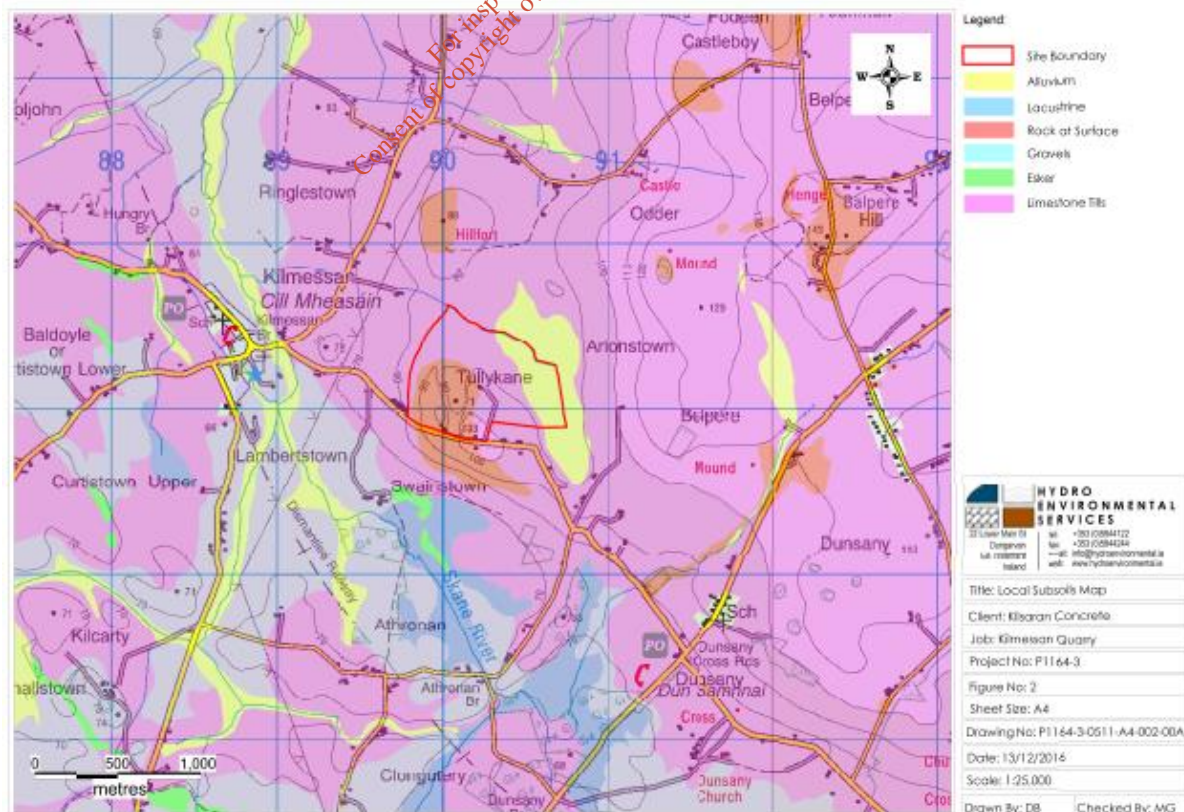
Environmental Impact Statements' (EPA 2003), and the 'Geology in Environmental Impact Statements - A Guide' published by the Institute of Geologists of Ireland (IGI 2013).

### 3.3.3 Topography

The existing Tullykane site is currently operated by Kilsaran Concrete as a limestone rock quarry. The overall elevation of the application area varies from approximately 105m AOD in the southern part of the site to 85m AOD towards the western and north-western section of the site. The current floor level varies from 69mAOD to 75mAOD within the extraction floor area. The topographic nature of the surrounding lands is generally of moderate relief and gently undulating.

## Soil and Sub-Soil / Quaternary Geology

Reference to the EPA Data, indicates that the principal soil type of this region is Shallow well drained basic mineral soil (BMinSVV). The subsoils are classified as a Till derived from Carboniferous Limestone. The dominant subsoil material in this region is a deep well drained limestone till deposit. This material is generally clay dominant with gravel intermixed. In the vicinity of the quarry, in the excavated area of Tullykane, the subsoil is thin and rock occurs at or close to the surface. The subsoil becomes thicker down slope, towards the Skane valley to the south and west. Within and immediately adjacent to gravels to the River Skane, alluvial deposits and gravels dominate. Figure 3.3.1 provides an extract from the GSI Subsoil mapping illustrating the mapped subsoils in the area.



### Fig 3.3.1 Local Subsoils Configuration

Within the quarry, all subsoil has been stripped to expose the bedrock. The stripped overburden has been used around the boundary of the site to create earthen berms, to mitigate direct views from the surrounding environment onto the site.

At the extremity of the quarry workings, soil profiles are evident. The depth of soil to the east and north vary between 2m and 4m. The subsoil is described, in accordance with BS5930 classification, as a Silt/Clay, with clasts of cobble to boulder size.

### Bedrock Geology

Reference to the relevant geological information, the 1:100,000 scale Sheet No. 13 — Bedrock Geological Map of Meath (Geological Survey of Ireland (GSI), 1994), indicates that the site and surrounding area is underlain by Dinantian age limestones (Loughshinny Formation). The eastern boundary of the site extends towards the Donore Formation, which conformably overlies the Loughshinny Formation. The geological conformable contact between Loughshinny and the older (underlying) Lucan (Ca1p) Formation occurs approximately 500m to the west and southwest of the quarry boundary. There are no mapped faults or any other geological structures identified on GSI Sheet No. 13 in the area of the proposed development. The distribution of geological units, within and surrounding the site, based on published information from the GSI is shown below on Figure 3.3.2. The composition and the characteristics of the various rock units are discussed below.

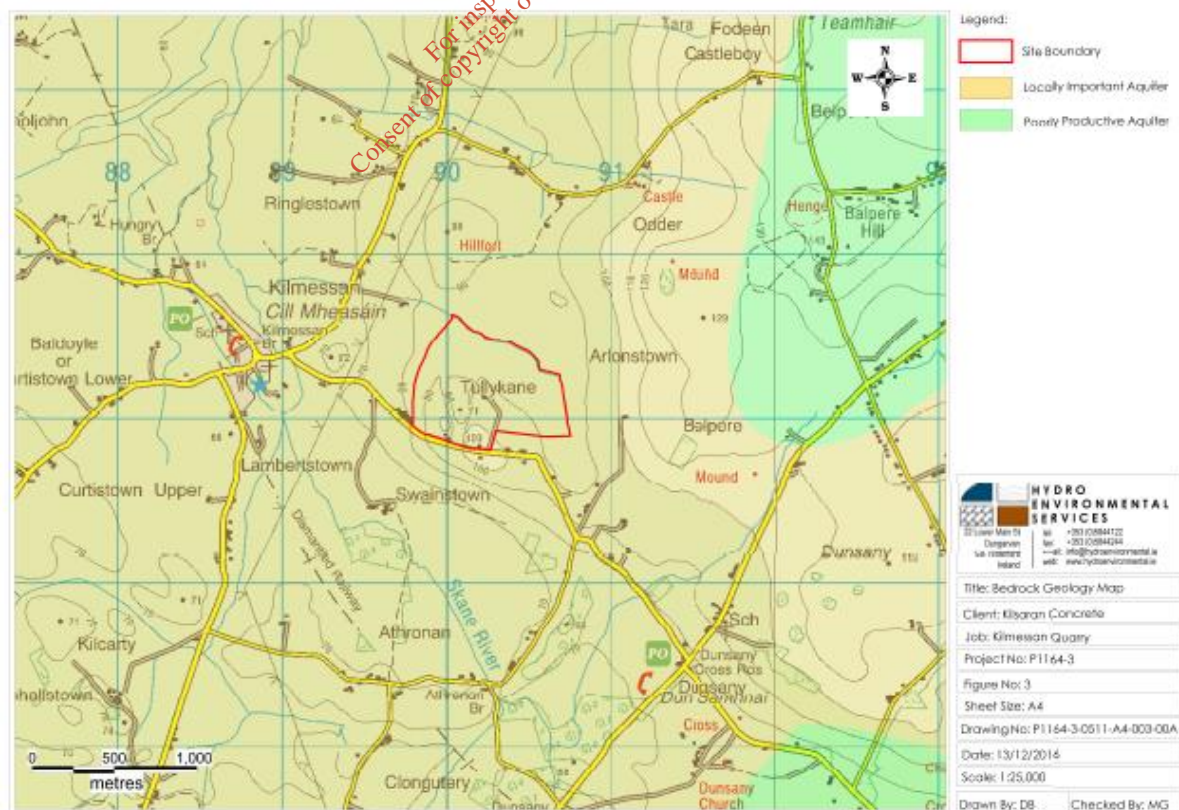


Fig 3.3.2 Bedrock Geology Mapping

## Loughshinny Formation

The Loughshinny Formation is comprised of laminated to bedded argillaceous limestones (ranging from 0.1m up to 1m beds), which are interbedded with dark grey/black shales. The variation in bed thickness, grain size, colour and proportion of shale varies in the succession and is a feature of the depositional environment in which these sediments were deposited.

The Loughshinny Formation conformity overlies the Lucan (Calp) Formation. Depths of the Loughshinny Formation can range up to 150m thick.

## Lucan (Caip) Limestone

Lucan (Ca1p) Limestones are similar in composition to the Loughshinny Formation. The term 'Calp' is used to refer to the various basinal limestone and shales occurring in these successions. The Calp units generally consist of dark grey, fine grained, impure limestone with interbedded black pyritic shales and veins of white calcareous spar. The thickness of the Lucan Formation ranges from 300m to 800m.

## Donore Formation

The Donore Formation consists mainly of shale and interbedded limestones. The geological contact is gradational with the Loughshinny Formation and is marked where the shale becomes predominant to the limestone.

With respect to site specific geological appraisal of the Tullykane Quarry, the rock exposed on quarry faces is a sequence of bedded argillaceous limestone and shale partings. The rock units, or beds, are inclined (slope) to the east at moderate angles. The layered limestone and shales are inclined at an angle ranging from 7 to 20 degrees, which is considered a slight to moderate dip.

The east and west quarry faces are essentially strike sections and occur as horizontal banks on the quarry face. The north and south faces represents a dip section, in which the succession is inclined. The succession is inclined to the east and the highest (or youngest) exposed beds occur to the northeast of the quarry, whereas the oldest beds occur to the southwest corner. Photo Plate No. 1 shows the quarry face on the eastern side of the quarry (strike section) which shows the beds almost horizontally layered.





**Photo Plate No 1**

Photo Plate No. 2 shows a quarry face on a northern face which shows the beds inclined at the dip angle (15-20 degrees on the photo shown).



**Photo Plate No 2.**

The younging of the succession is evidence to the northeast of the quarry, where the proportion of shale increases appreciably. This higher proportion of shale is considered to represent the occurrence (or approach) of the gradational contact between the Loughshinny Formation and the overlying Donore Formation owing to the dominance of shales beds over the argillaceous limestone as recorded by the GSI.

Assuming that the top of the succession occurs to the northeast of the existing quarry and the inclination of the rock is at maximum 20 degrees, the continuation of the limestone dominant rock succession is assumed well below the proposed extraction depth of 36m. The GSI record that the Loughshinny Formation, which is exposed within the existing quarry, is up to 150m thick, thereby extending below the proposed floor level of the quarry extension.

Visual appraisal of the existing quarry faces indicates that the rock succession exposed within the Tullykane Quarry comprises argillaceous limestone and shale parting. The argillaceous limestone is dominant, except to the extreme northeast. The limestone beds vary from 0.2m to 1m. The shale bands are generally thin ranging from 0.1m to 0.5m.

The bedding in the quarry faces is continuous across extensive distances.



The rock is generally very tight, however dominant vertical north-south orientation jointing (fracture) orientation is noted across the quarry. To a lesser extent and less well developed, southwest to northeast jointing is noted.

Photo Plate No.3 shows a representative view of the jointing system developed in the bedrock.



The rock is generally very tight, however dominant vertical north-south orientation jointing (fracture) orientation is noted across the quarry. To a lesser extent and less well developed, southwest to northeast jointing is noted.

The jointing of the rock is generally closed and very tight. On a very detailed inspection of the joint the vertical planes display evidence of being infilled with fine grained sand and mineral detritus. This infill continued a short distance horizontally along bedding planes. Elsewhere some joint patterns are close due to calcite infill mineralisation.

The infill of the jointing with sediment and mineralisation indicates groundwater flow within the formation in the geological past. However this groundwater flow appears to have been restricted, and solution enlargement of the joints within the bedrock is not evident. The limestone is strong and tight across the site. There is no visual evidence of washout of joins or bedding. Argillaceous (impure) limestone would not naturally, due to its composition be prone to extensive karst



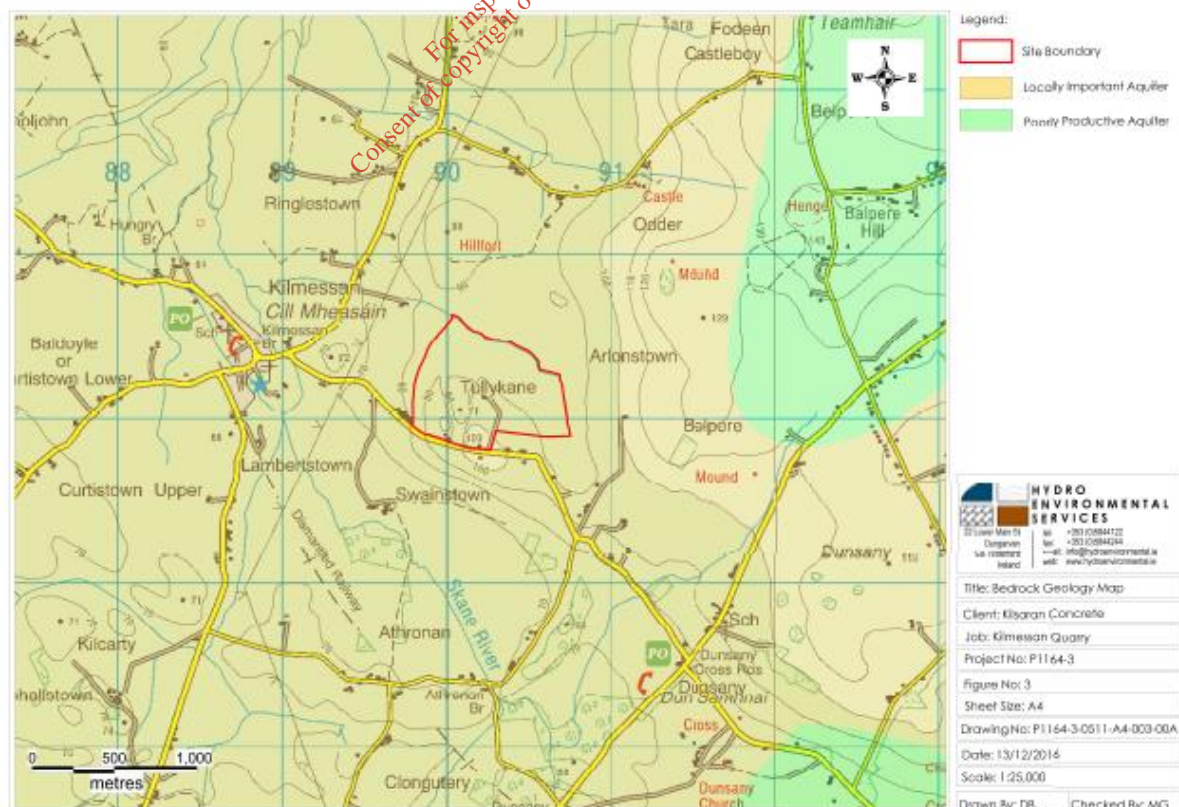
development. Extensive karst development is more common in clean pure limestones, which does not occur in this region.

Two minor faults have been identified to the west of the site and to the north face of the quarry. The site has over the last number of years been subjected to extensive drilling of geological core boreholes, groundwater boreholes and exploratory boreholes. In total 24 intrusive investigations were logged. All boreholes recorded a succession of strong fine to medium grained limestone with minor black calcareous shale. The limestones dominate in the succession. The results are consistent with the rock exposed on the existing quarry walls and also the bedrock recorded by the GSI.

The drilling has demonstrated that the same succession of bedrock continues to at least 60m below the current topographic level of the quarry. As it is proposed to apply for excavation to 37m below current levels, it can be strongly assumed, based on intrusive investigations, that the same succession will be encountered to finished depth.

### Aquifer Classification

Reference to the National Aquifer Map, prepared by the Geological Survey of Ireland, the Loughshinny and the Lucan Formation are both classified as Locally Important Aquifers, which are moderately productive (Lm). The Donore Formation is classified as a Poorly Productive Aquifer, which is generally unproductive except in localised zones (PI). Figure 3.3.3 shows the aquifer distribution, as extracted from the National Aquifer Map of Ireland, prepared by the GSI.



During assessments within the site no groundwater inflows were noted to 111" the quarry from the quarry walls. During periods of very heavy rainfall, seepages from the surface adjacent to the quarry were noted along 119- discrete joints within the quarry. The estimated yields from the boreholes are generally low, however inflows were noted along some fracture zones.

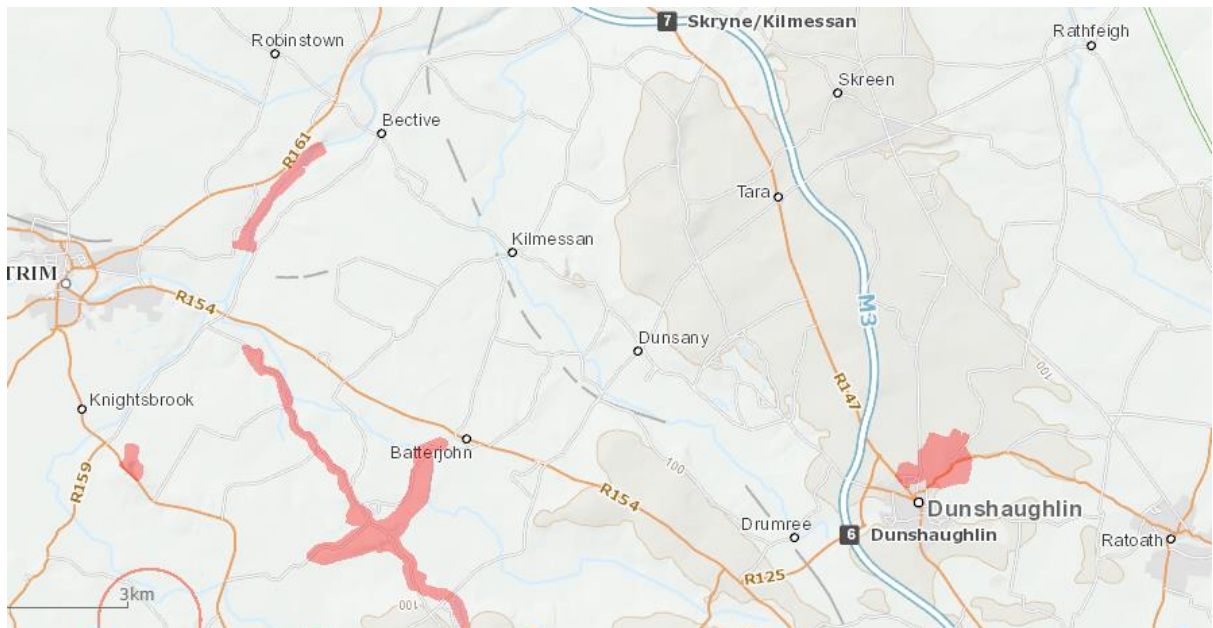
The current quarry floor is dry and rainwater ponding on the floor dissipates into the floor over time (i.e. hours to days). A number of water collection sumps have been excavated within the quarry to allow for drainage of rainwater from the site. These sumps and their water level are relatively constant and considered to represent the regional water table.

During drilling within the site, groundwater inflows were noted from 2-4m below ground level. The extent of groundwater inflow to boreholes was dependent on the intersection of fractures and their openness. Some boreholes continued to 30m bgl without encountering any fractures and were completely dry to finished depth. It may be assumed that during the excavation of first full bench, Bench 1 (72m AOD (approx.) to 55m AOD approximately) and subsequent Bench 2 (55m to 37m AOD approximately) of the ongoing quarrying development, works will be conducted below the water table proper. Details of the hydrogeological environment are described in full in Section 3.4 of the EIS.

#### 3.3.4 Geological Heritage

The Irish Geological Heritage (IGH) programme identifies and selects a complete range of sites that represent Ireland's geological heritage. The programme is operated by the Geological Survey of Ireland (GSI), and selected sites are proposed as County Geological Sites, for inclusion within the respective County Development Plan. County Geological Sites do not receive statutory protection afforded Natural Heritage Areas (NHA), but receive an effective protection from their inclusion in the planning system. The GSI may also propose to the National Parks and Wildlife Service (NPWS) that specific sites identified as important for conservation are designated as NHA's, and thus receive statutory protection.

In its 2013-2019 County Development Plan (CPD), Meath County Council recognises areas of conservation value, which include twenty eight County Geological Sites. A search of the local sites indicates that the site at Tullykane is not located or does not represent a Geological heritage site in the county.



**Figure 3.3.4**

### 3.3.5 Assessment of Impacts

#### 3.3.5.1 Direct Impacts

The nature of the proposed development involves the importation and placement of inert soil and stone as backfill in the quarry void. The application site for the proposed development occupies the entire area of the existing quarry, and as such will have no impact on virgin soils, sands and gravels, which have already been stripped, disturbed or extracted. As a result of backfilling using inert soils and stones, the proposal will continue to progress the reinstatement of the quarry back to land suitable for agriculture, and thus will have a positive impact.

In the development of the early stages of restoration i.e. where the bedrock is exposed in the initial phases and levels it will be imperative to ensure that the materials entering the facility are inert and non-leaching with adequate classification under the waste classification criteria. Failure to do so could result in issues for the geology and hydrogeology below the site.

Soils will only be handled in dry weather conditions. Soils will not be placed when the moisture content is high, such as after heavy rainfall. Soils will not be moved in unusually dry and windy weather conditions. All temporary storage mounds will have slope angles not greater than 1:1.5 and will be re-vegetated as quickly as possible to avoid soil erosion by air and water.

The same will be the case for the development of the Public amenity park although there will most likely be some stripping of the topsoil and subsoil for levelling purposes this material will be replaced onsite.

#### 3.3.5.2 Indirect Impacts

The proposed development will have no indirect impact on the local or regional geology, as placement of the inert soil and stone will not release contaminants onto the lands, whilst dust from the restoration activities will be tightly controlled via the environmental management system and monitoring programme.

#### 3.3.5.3 Do Nothing Impacts

The proposed restoration of the quarry at Tullykane recovers significant quantities of inert soil and stone through backfilling in the quarry void. Failure to recover soil and stone for the beneficial use of land improvement, specifically reinstatement of a quarry, could result in unnecessary exhaustion of landfill space. Thus, it is considered in this regard, that the proposed development will have a positive impact.

#### 3.3.6 Interaction with other Impacts

The interaction of the quarry and Proposed development is seen as 'symbiotic' and positive, with no negative cumulative impacts on the geological environment identified. A positive cumulative long term impact on the local soils is the re-emergence of the soil functionality in the quarry area which will lead to greater productivity for the area and establishment of a new soils regime locally.

#### 3.3.7 Mitigation and Monitoring

In respect of the identified impacts for soil and geology it is considered that no significant potential impacts are envisaged for soil or geology arising from the proposed development. The potential for the bedrock to be exposed to contaminants is quite large and thus waste acceptance criteria for the site must be very strict and in line with the requirements of all existing waste management legislation. On the ground procedures for soil and stone acceptance must clearly pre-identify target soils incoming to the site and must be subjected to technical review prior to acceptance at the facility. Monitoring of representative incoming loads is recommended to ensure no illegal material are gaining access to the site.

### 3.3.8 References

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13. Kilsaran Concrete proposed quarry development and Readymix plant at Tullykane, Kilmessan, Co Meath EIS Sept 2008
14. Meath County Council (2007) Meath Landscape Character Assessment, Meath County Council, Navan, Co. Meath, Ireland, 96 p.
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## 3.4 Water

### 3.4.1 Introduction

This section of the EIS describes the hydrological and hydrogeological setting in a regional and local context. It provides a risk assessment of the potential impacts of the proposed development on surface water features and groundwater in the vicinity of the site. The primary objective of the hydrological and hydrogeological risk assessment is to assess the impact posed to surface water and groundwater in the area by the proposed activities. Where appropriate, mitigation measures are recommended. The hydrological and hydrogeological assessment has been prepared in accordance with guidelines on Geology in Environmental Impact Statements issued by the Institute of Geologists of Ireland. Hydro-Environmental Services (HES) were appointed to carry out the works required to assess the impacts of the proposed development on the water and hydrogeology of the surrounding area. HES are a specialist hydrological, hydrogeological and environmental practice which delivers a range of water and environmental management consultancy services to the private and public sectors across Ireland and Northern Ireland. HES was established in 2005, and our office is located in Dungarvan, County Waterford.

### 3.4.2 Scope of the works

In order to assess the risk to soils / geology and groundwater/ surface water and complete the required impact assessment, HES has carried out the following scope of works:

- Desk study of the site area and review available geological, hydrological and hydrogeological data for the site and area;
- [Please note that Hydro-Environmental Services have completed significant work on this site in the past, and there is substantial site investigation and monitoring data underpinning our hydrological and hydrogeological understanding of the site – See Section 1.6 below];
- Completed a detailed site walkover survey to confirm site remains as it was during previous surveys in 2010/2011;
- Review of site geology and drainage;
- Identification of potential off-site groundwater receptors and risk assessment in respect of same; and,
- Overall conclusions regarding site hydrogeology and risk to groundwater and local water receptors.

### 3.4.3 Description of the proposed development

The proposed development comprises the backfilling of the current quarry void with inert soil and stone under a Waste License from the Environmental Protection Agency (EPA). A small quantity of concrete will also be accepted to be used to construct internal roads. The quarry void is currently

being dewatered on an ongoing basis and once the backfilling is completed, the groundwater table will be allowed to recover to its natural level.

In addition, it is proposed that a community park will be constructed on the western part of the site for local amenity use. The community park will include playground, a playing pitch and other green areas.

#### 3.4.4 Existing Site Data

A significant amount of geological, hydrological and hydrogeological data is available for the proposed development site from investigations carried out for a previous planning application relating to a quarry extension at the site (planning permission Reference No. TA/802731, which was granted on 23<sup>rd</sup> December 2011).

Please refer to Hydro-Environmental Services report “*Response to an Bord Pleanála Regarding a Request for Further Information for the Continuation of a Quarry Development (Granted under Planning ref no. 99/1230) at Tullykane, Kilmessan, Co. Meath*” (18<sup>th</sup> May 2011), for full details of the investigations carried out.

The investigations are far too detailed to include them fully in this report and therefore a summary of the investigations carried out (relevant interpretations are also discussed further below) are listed below:

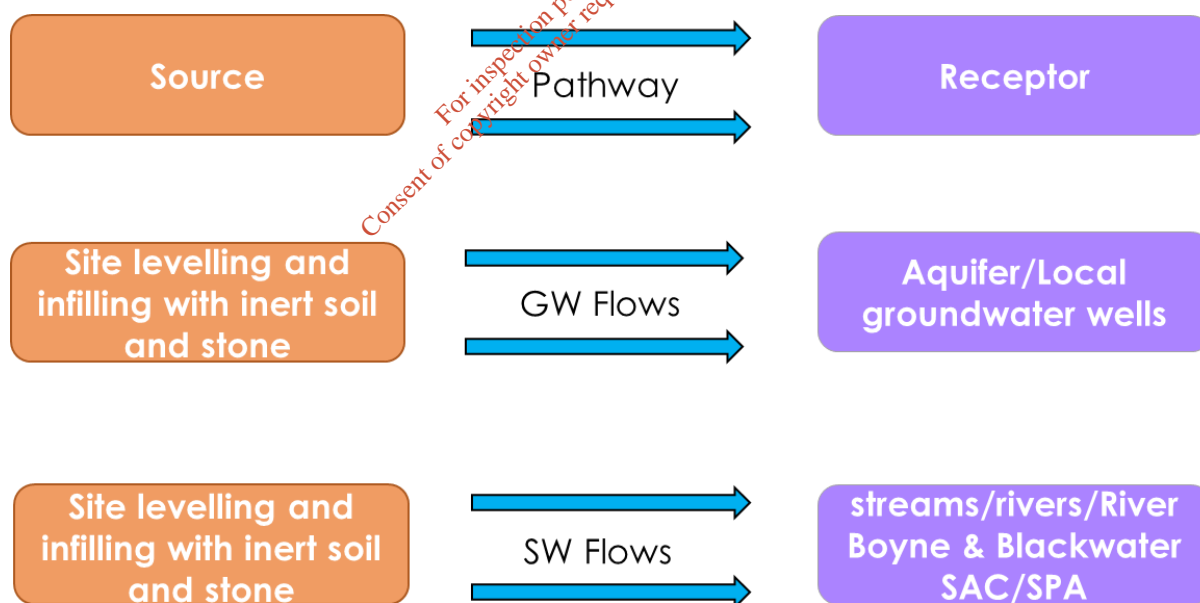
- Exploratory narrow well drilling (76 no. holes) across the floor of the quarry to identify zones of groundwater flow (i.e. to find groundwater in fractures/faults or conduits);
- Phase of drilling outside the quarry void to install groundwater monitoring wells (6 no.) along identified zones of preferential groundwater flow;
- Installation of pumping wells on quarry floor (2 no.) at locations where high groundwater yields were recorded during the exploratory well drilling;
- Completion of a multi-well pumping test (2 no. pumping wells & 2 no. sump pumps) of three months duration to simulate quarry dewatering of bedrock below the existing quarry floor;
- Complete surface water flow and stage and groundwater level monitoring before the pumping test to establish background water levels;
- Groundwater and surface sampling during and after the pumping test; and,
- Monitoring of water levels in local wells (including the Kilmessan Public Supply Well) before, during and after the pumping test.

Prior to the HES site investigation in 2010 / 2011, investigations were also previously completed at this site by O'Neill Groundwater Engineering (1999), John Barnett & Associates (JBA, 1999) and Tobin Consulting Engineers (2007).

### 3.4.5 Study Methodology

The conventional source-pathway-receptor model (see graphic below) for groundwater / surface water protection was applied to assess impacts on groundwater and surface water specifically on downstream sensitive ecological receptors and groundwater supplies. In the case of the subject site the primary sources of impact is the infilling of the void with inert soil and stone whereby the primary potential hazards are suspended solids, leaching and spillages, and accidental discharges of potential pollutants to the local surface waters and groundwater causing a deterioration in water quality. It should be noted that the proposed infill material is to be inert soil and stone and therefore no harmful/toxic contaminants are expected to be present.

The pathway in terms of groundwater flow-path is via the shallow groundwater flow system, and for surface water this will be via the pumped discharge and then then via the stream to the north of the proposed site that ultimately enters the River Skane and then the River Boyne. The primary local targets of concern are the underlying bedrock aquifer, local wells and local and regional surface water receptors.



Where potential impacts on groundwater quality<sup>7</sup> or quantity<sup>8</sup> or surface water quality are identified, the classification of impacts in the assessment follow the definitions provided in the Glossary of Impacts contained in the following guidance documents produced by the Environmental Protection Agency (EPA):

<sup>7</sup> Impacts on the chemical status.

<sup>8</sup> Impacts on quantity in terms of recharge or groundwater flow.

- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003); and,
- Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2002).

The description process clearly and consistently identifies the key aspects of any potential impact source, namely its character, magnitude, duration, likelihood and whether it is of a direct or indirect nature. In order to provide an understanding of the stepwise impact assessment process applied below, we have firstly presented below a summary guide that defines the steps (1 to 7) taken in each element of the impact assessment process in Error! Reference source not found.. The guide also provides definitions and descriptions of the assessment process and shows how the source-pathway-target model and the EPA impact descriptors are combined.

Using this defined approach, this impact assessment process is then applied to all levelling and infilling activities which have the potential to generate a source of significant adverse impact on the geological and hydrological/hydrogeological (including wells, streams and water quality) environments.

Step 1	<b>1. Identification and Description of Potential Impact Source</b> This section presents and describes the activity that brings about the potential impact or the potential source of pollution. The significance of effects is briefly described.	
Step 2	<b>Pathway</b>	The route by which a potential source of impact can transfer or migrate to an identified receptor. In terms of land infilling developments, surface water and groundwater flows are the primary pathways.
Step 3	<b>Receptor:</b>	A receptor is a part of the natural environment which could potentially be impacted upon, e.g. human health, plant / animal species, aquatic habitats, soils/geology, water resources, water sources. The potential impact can only arise as a result of both a source and pathway being present.
Step 4	<b>Pre-mitigation Impact:</b>	Impact descriptors which describe the magnitude, likelihood, duration and direct or indirect nature of the potential impact before mitigation is put in place.
Step 5	<b>Proposed Mitigation Measures:</b>	Control measures that will be put in place to prevent or reduce all identified significant adverse impacts. In relation to developments in general, these measures are generally provided in two types: (1) mitigation by avoidance, and (2) mitigation by engineering design.
Step 6	<b>Post Mitigation Residual Impact:</b>	Impact descriptors which describe the magnitude, likelihood, duration and direct or indirect nature of the potential impacts after mitigation is put in place.
Step 7	<b>Significance of Effects:</b>	Describes the likely significant post mitigation effects of the identified potential impact source on the receiving environment.

### 3.4.6 Existing Environment

#### 3.4.6.1 Site Description and Topography

The site is situated in the townland of Tullykane which exists 1km southeast of Kilmessan town in Co. Meath.

The proposed development site area is ~51.4ha. The site is an existing bedrock quarry with the floor of the quarry having a ground elevation of between approximately 72.5 and 73.7m OD (Ordnance Datum). The ground elevation surrounding the extraction area is at approximately 87m OD. There are high earthen berms in place that run along the northern, eastern and southern boundaries of the site. The site entrance, weighbridge, offices and workshop are located on the southwest of the site. The existing quarry floor is below the local groundwater table and water (groundwater and surface water) is continuously being pumped from 2 no. separate sumps located on the quarry floor in order to maintain the extraction area dry.

Landuse in the surrounding area is largely agricultural with scattered rural pattern of residential dwellings.

#### 3.4.6.2 Local Geology

Based on the EPA soils map for the area ([www.epa.ie](http://www.epa.ie)) shallow, well drained, basic mineral soils (BminSW) overlie much of the area outside the quarry footprint. Deep, well drained, mineral soils (BminDW) are more predominant in the wider area surrounding the site. Alluvium soils are mapped to the east and northeast of the site.

The mapped subsoils in the vicinity of the site are Limestone tills (TLS) which were laid down during the last glaciation. These are glacial tills derived from Carboniferous limestone and shale bedrock. The quarry footprint itself is absent of soils and subsoils as a result of rock extraction. The local subsoils map is attached as Figure 2 to the main document.

Based on site investigation data subsoils in the vicinity of the quarry comprise predominately dark brown/grey gravelly CLAY. Dark grey / black fine SAND overlying gravelly SAND was found to exist immediately to the east of the quarry site. This is consistent with the EPA soils map of the area. Soils and subsoils are also exposed around the edge of the quarry and variable depths of till, consistent with that described above are present.

Based on the GSI ([www.gsi.ie](http://www.gsi.ie)) bedrock map (refer **Figure 3**) for the area the quarry is located in the Loughshinny Formation which is a Dinantian upper impure limestone (more commonly referred to as Calp Limestone). Based on the GSI description the Loughshinny Formation comprises primarily impure limestones and limestones interbedded with calcareous shales (GSI, 1998). This sequence is exposed in the quarry face. The Carboniferous rocks of this region were deposited in a very complex manner with local variations whose lack of lateral continuity has resulted in many local stratigraphical units (GSI, 1998).

A total of 76 no. investigation boreholes (EH16 – EH91) were drilled on the quarry floor as part of the 2010 / 2011 investigations for the quarry extension (refer to **Figure 1** for the site investigation locations).

The approach to the quarry floor site investigation included targeted and randomly located exploration holes. However, the majority of the wells were targeted along specific zones. Targeted exploration boreholes were positioned along the orientation of inferred fracture zones within the



quarry floor which were identified during previous site investigations and during a detailed survey of the existing quarry face.

On the south-eastern face of the quarry a clay filled fracture with an approximate northwest/southeast strike was identified. On a north facing rock bank on the west of the quarry a quartz filled fracture zone with an approximate northeast southwest strike was identified.

In summary, the bedrock geology encountered during drilling was a dark grey/black limestone with shale bands down to the maximum drilling depth of 30.8mbgl. The limestone encountered during drilling was generally competent with softer drilling within the shale bands. Where fracture zones were encountered they generally comprised slightly weathered, broken limestone with calcite and minor amounts of light brown CLAY deposits.

Based on the investigation drilling, two main fracture zones were found to intercept the quarry site. These fractures are referred to as the eastern and western fractures and their locations are shown on **Figure 4** (Results of Exploration Drilling).

#### 3.4.6.3 Rainfall and Evaporation

The long term Average Annual Rainfall (AAR) recorded at Kilmessan (G.S.) is 802mm ([www.met.ie](http://www.met.ie)). The long term average potential evapotranspiration (PE) recorded at Dublin Airport, which is the closest synoptic station to the site, is taken to be 554mm. The actual evapotranspiration (AE) is calculated to be 526mm (95% PE). Using the above figures the long term effective rainfall (ER) for the site is calculated to be (ER = SAAR – AE) 276mm (refer **Table A** below). Effective rainfall is the proportion of total rainfall which is available for runoff or infiltration (*i.e.* recharge).

**Table A: Summary of long term Meteorological Data**

Average Annual Rainfall (mm) (R)	802
Estimated P.E. (mm)	554
Estimated A.E. (95% of P.E.) (mm)	526
Effective Rainfall (mm)	276

#### 3.4.6.4 Regional and Local Hydrology

On a regional scale the proposed site is located with the River Boyne surface water catchment (Code: IE23\_02) within Hydrometric Area 07 of the Eastern River Basin District.

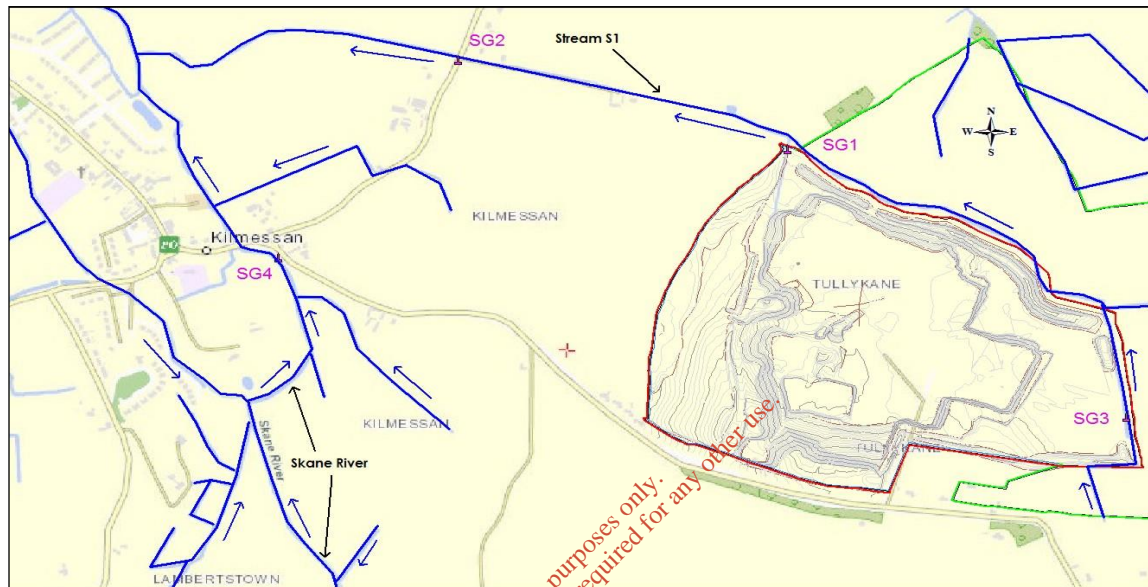
A regional hydrology map is shown as **Figure 5**.

On a more local scale the proposed site is located in the Skane River surface water catchment. The Skane River flows in a north-westerly direction approximately 0.65km to the southwest of the site boundary. A local hydrology map is shown as Error! Reference source not found..

An unnamed stream (referred to as Stream S1), which is a tributary of the Skane River (with a surface water catchment area of 3.02 km<sup>2</sup>), flows along the northern boundary of the site in a north-westerly direction prior to merging with the Skane River approximately 500m downstream of Kilmessan Bridge.

Groundwater and surface water pumped from the quarry floor is currently being discharged into Stream S1 (This is discussed further in the section below). The total flow in this stream is predominately made up of quarry discharge.

Surface water flows in this stream were monitored during the quarry investigations carried out in 2010/2011. Measured flows upstream of the quarry discharge point (natural baseline flows) are shown in Error! Reference source not found. below.



Stream S1 is an ephemeral stream, and only flows in response to rainfall. At the site stream S1 is some 13 -14m higher than the existing floor of the quarry, and the stream is perched within the glacial till along the northern boundary of the quarry.

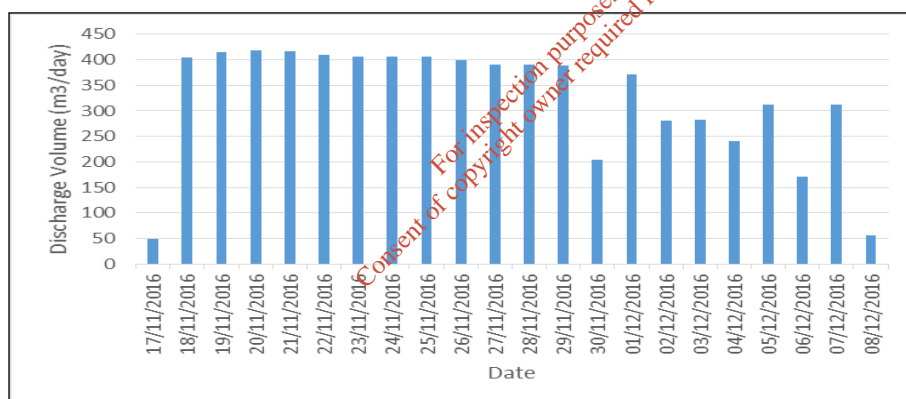
Table 3.4.1 Stream S1 Baseline flows

Date	Measured Flow m <sup>3</sup> /sec
18/10/2010	No flow
19/10/2010	No flow
27/10/2010	No flow
10/01/2011	0.064
24/01/2011	0.018
27/01/2011	0.019
07/02/2011	0.100
24/02/2011	0.017
29/03/2011	0.005
03/05/2011	0.002

### 3.4.6.5 Existing Site Drainage

There are no surface water features in the proposed development site. The majority of rainfall landing on the site either recharges to groundwater, is pumped from the quarry floor to Stream S1 via the dewatering system (described below) or is lost to evaporation. There will be some localised runoff from the site along the site boundary. The groundwater level at the existing quarry is currently being kept lower than the quarry floor by 2 no. sump pumps (groundwater levels are discussed further below). The sump pumps are controlled by water level sensors that are located in each sump. Both sumps are pumped to a settlement pond which is located on the northwest of the quarry site. The settlement then pond discharges into Stream S1 via an oil interceptor and v-notch weir. The average daily discharge rate from the quarry ranges from 0 – 5,500m<sup>3</sup>/day. This includes groundwater and surface water, and only increases to higher rates during periods of prolonged rainfall. The existing quarry surface water and groundwater management system including the discharge point are shown on **Figure 6**.

Discharge volume monitoring was completed in November and December 2016, and these data are plotted on **Figure A**. Discharge rates varied from 49 to 418 m<sup>3</sup>/day.



**Figure A: Discharge data Nov-Dec 2016**

### 3.4.6.6 Water Framework Directive Surface Water Body Status

Local Groundwater Body and Surface water Body status reports are available for downloaded from [www.wfdireland.ie](http://www.wfdireland.ie).

The Skane Upper (IE\_EA\_07\_899) which exists upstream of the proposed site is assigned an overall 'Poor Status' with an overall risk<sup>9</sup> result of 1a (At Risk). The primary risk is from diffuse sources.

The Skane Lower (IE\_EA\_07\_1629) which exists downstream of the quarry site is assigned an overall 'Moderate Status' with an overall risk result of 1a (At Risk). The primary risk is from diffuse sources and morphological impacts.

The Boyne Lower 2 (IE\_EA\_07\_1894\_2) which exists downstream of the Skane Lower is assigned an overall 'Moderate Status' with an overall risk result of 1a (At Risk). The primary risk is from diffuse sources and morphological impacts.

The Boyne Lower 3 (IE\_EA\_07\_1894\_3) is assigned an overall 'Moderate Status' with an overall risk result of 1a (At Risk). The primary risk is from diffuse sources and morphological impacts. A summary of the water body status and risk is shown in **Table B** below.

**Table B:** Summary WFD Information for Surface Water Bodies.

Water Body	General Physico-chemical Status	Macro-invertebrate Status	Overall Status	Overall Risk Result	Overall Objective
Skane Upper	Moderate	Poor	Poor	At Risk (1a)	Restore_2021
Skane Lower	Moderate	Moderate	Moderate	At Risk (1a)	Restore_2021
Boyne Lower 2	Good	Moderate	Moderate	At Risk (1a)	Restore_2021
Boyne Lower 3	Good	Moderate	Moderate	At Risk (1a)	Restore_2021

#### 3.4.6.7 Surface Water Quality Data

Baseline surface water quality monitoring data (monthly) for Stream S1 upstream of the quarry discharge point is shown in **Table C** below. Total suspended solids and BOD are significantly below the Freshwater Fish Directive (2006/44/EC) for both Salmonid and Cyprinid waters.

<sup>9</sup> 'At Risk' means that a water body will not achieve good ecological or good chemical status/potential by at least 2015. The risk to the waterbody is placed in four categories: 1a at risk, 1b probably at risk, 2a probably not at risk, 2b not at risk (WFD, 2010).

**Table C:** Background Water Quality Monitoring Data for Stream S1

Parameter	Monitoring Period	Max	Min	Average	2006/44/EC
BOD	2001 - 2006	7.8	0.4	1.37	3
Suspended Solids	2001 - 2013	399	0.5	11.8	25
Chloride	2001 - 2005	343	17.7	24.6	-
Nitrate	2001 - 2006	51.3	0.75	16.4	-
Nitrite	2001 - 2005	0.46	0.007	0.053	-
Conductivity	2001 - 2005	832	472	658	-
pH	2001 - 2013	8.9	6.6	7.6	-

EPA surface water quality monitoring data for the Skane River 1km upstream of the site at Athronan Bridge (0300) and 3km downstream at Balgeeth (0510) are shown in **Table D** below. For comparison purposes, Environmental Objectives Surface Water Regulations values (S.I. 272 of 2009) are shown in **Error! Reference source not found.** below.

**Table D:** Summary EPA Surface Water Quality Monitoring Data (2015) for the Skane River

Parameter	Athronan Br	Br NE of Balgeeth
	<b>Mean Value for 2015</b>	
Alkalinity-total (mg/L as CaCO <sub>3</sub> )	289	277
Ammonia-Total (mg/L as N)	0.043	0.032
BOD - 5 days (Total)	1.35	1.4
Chloride (mg/L)	22.57	22.5
Conductivity (µs/cm @25Â°C)	721	720
Dissolved Oxygen (mg/L)	10.5	11.1
Ortho-Phosphate (mg/L as P)	0.028	0.023



**Table E:** Surface Water Regulations values (S.I. 272 of 2009)

BOD	High status $\leq 1.3$ (mean) Good status $\leq 1.5$ mean
Ammonia-N	High status $\leq 0.04$ (mean) Good status $\leq 0.065$ (mean)
Ortho-phosphate	High status $\leq 0.025$ (mean) Good status $\leq 0.035$ (mean) Poor status $\geq 0.035$ (mean)

In relation to the Surface Water Regulations values, BOD is within the Good status threshold at both monitoring locations. Ammonia is within the High status threshold and Good status threshold at Balgeeth and Athronan respectively.

Orthophosphate is within the High status threshold and Good status threshold at Balgeeth and Athronan respectively.

#### 3.4.6.8 Regional and Local Hydrogeology

The Dinantian upper impure limestones (Calp limestones) are classified by the Geological Survey of Ireland ([www.gsi.ie](http://www.gsi.ie)) as Locally Important Aquifers which are generally moderately productive (Lm). Where variations in bedrock are encountered especially where secondary permeability is well developed due to faulting, well yields are often much higher than would be expected in Calp limestone (GSI, 1998). The Calp limestones around north Dublin and south Meath area are known to be more folded and faulted than in other areas where these rocks occur. The Calp limestones are also known to be dolomitised and karstified in places (GSI, 1998).

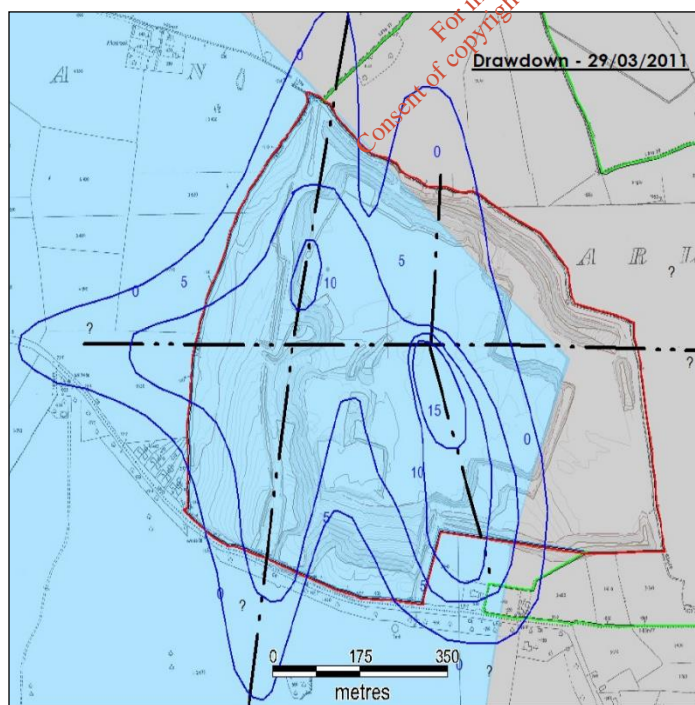
Due to the extremely heterogeneous nature of the Calp limestones of this area, the hydrogeological properties of the aquifer are highly variable. Available evidence and experience suggests that the degree of karstification throughout the area is also highly variable, as is the degree of structural deformation. Groundwater will flow mainly along solution weathered fractures/faults. There will not have been the large-scale dissolution of the limestone rocks to convert these into large conduits that concentrate flow deep underground (GSI, 2004). Development of large-scale conduits systems of this sort is more common in purer limestones (which are not present in this area). However, along weathered and karstified fractures/faults there can be considerable flows of groundwater, but away from these (often linear) zones, the bulk of the remainder of the bedrock is poorly productive with tight jointing which limits the quantity of groundwater that can be stored and transmitted.

Specific data from pumping tests in two different areas of the Calp Limestone illustrate the heterogeneity of this wider aquifer: Slane WS (PW1), Co. Meath: 70-200 m<sup>2</sup>/d. Dunshaughlin Water Supply Well, Co. Meath: 50-60 m<sup>2</sup>/d.

#### 3.4.6.9 Site Hydrogeology

A 3 no. month duration pumping test was undertaken at the site in 2011. The pumping test comprised 2 no. pumping wells and 2 no. sump pumps which were located on the quarry floor. During the initial stages of the pumping tests discharge rates ranged between 4,600 and 5,200m<sup>3</sup>/day. The pumping rate reduced to ~1800m<sup>3</sup>/day towards the end of the test. The pumping test was undertaken to assess the effects of increased dewatering on the local hydrogeological regime of the area as a result of deepening the quarry void further than its current depth. There is no plan to dewater the site once the backfilling is completed (the currently operating shallow sumps pumps will be switched off), but the pumping test carried out in 2011 provides a good insight into the hydrogeology of the site.

The effect of the pumping test on groundwater levels after three months of pumping is illustrated on the contour map as shown in **Figure B** below. The plot is an interpolation of the collected groundwater level data and the known structural elements of the local bedrock system determined from mapping and drilling (*i.e.* linear heterogeneous zones). The water level decline during pumping test was not even or uniform. There was no 'cone of drawdown', as would be expected in classic, or text book depictions of the effect of a pumping test in an isotropic, porous permeable aquifer.



**Figure B: Groundwater Contour Map**

The groundwater contour plot illustrates how the lowering of groundwater levels was controlled by the structural geology of the site. Groundwater levels went down more rapidly along the zones of fracturing and secondary conduits created by weathering. There is a strong, roughly, north-south alignment and a less dominant east-west alignment to the shape of the water level contours. This pattern illustrates that groundwater levels first fell along these linear zones. Then, as water levels fell in the linear zones, water started to slowly drain under gravity from the less fractured, mass of bedrock containing very narrow joints and bedding planes. There is very little water stored in these joints, and water can only seep from them slowly. The water stored in the joints and bedding planes flowed slowly into the linear zones and then quickly flowed to the pumping boreholes.

The pumping response implies that there is subsurface east-west liniment / fracture system across the floor of the quarry. Towards the end of the pumping test two north-south drawdown areas (eastern and western fracture) begin to merge.

#### 3.4.6.10 Site Groundwater levels and gradients

A summary of site groundwater levels measured during November and December 2016 are shown in **Table F** below. Please note that these groundwater levels do not reflect the natural baseline groundwater levels of the site as the quarry is still being dewatered by the 2 no. sumps pumps.

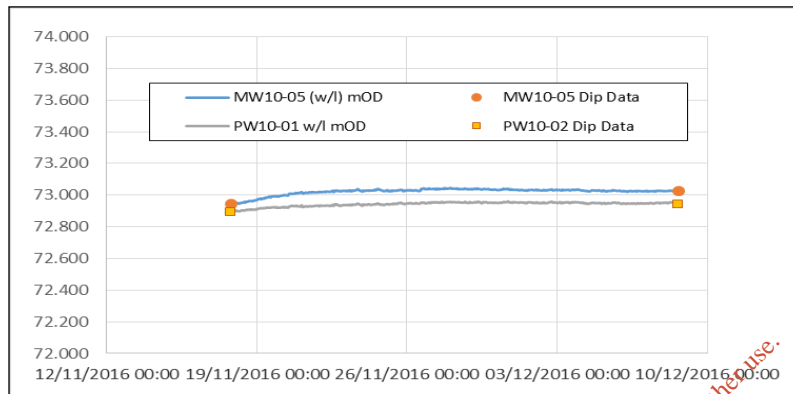
Groundwater levels were also recorded in MW10-05 and PW10-02 continuously between 17<sup>th</sup> November and 08<sup>th</sup> December 2016. These data are plotted on **Figure C** below.

Based on the groundwater levels shown in **Table F** below, the groundwater elevation beneath the floor of the quarry is between approximately 71.963 and 72.894m OD while the groundwater elevation outside of the quarry void area is between approximately 68.788 and 80.871 m OD. Based on these levels, (and even under the current pumping regime) the overall groundwater flow direction in the area of the site is in a south / south-westerly direction which is consistent with the local topography. It is expected that the majority of groundwater flow beneath the quarry will be via the 2 no. north / south trending fracture zones that were identified during the investigation works.

**Table F: Site Groundwater Levels**

Well Name	Ground	Reference Level	17/11/2016		08/12/2016	
	Elevation (mOD)	(mOD)	WL (mbRef)	WL (mOD)	WL (mbRef)	WL (mOD)
PW10-01	73.627	73.844	0.95	72.894	0.90	72.944
PW10-02	73.368	73.787	4.26	69.527	4.82	68.967
MW10-01	94.676	95.008	26.22	68.788	26.59	68.418
MW10-02	90.219	91.263	21.67	69.593	22.16	69.103
MW10-03	87.607	87.984	8.52	79.464	8.77	79.214
MW10-04	89.148	89.541	8.67	80.871	8.82	80.721
MW10-05	85.285	86.307	13.36	72.947	13.28	73.027

MW10-06	88.635	88.975	1.04	87.935	1.06	87.915
OW2	74.246	74.539	2.06	72.479	1.95	72.589
OW3	73.73	74.198	1.44	72.758	1.22	72.978
M2	88.678	89.066	17.68	71.386	17.95	71.116
M3	96.704	97.283	25.32	71.963	25.45	71.833



**Figure C: Continuous water levels Nov – Dec 2016**

#### 3.4.6.11 Groundwater Vulnerability

The GSI ([www.gsi.ie](http://www.gsi.ie)) groundwater vulnerability rating for the site is Extreme X (*i.e.* rock is at or close to the surface) and Extreme E (*i.e.* subsoils are less than 3 metres thick). The quarry footprint itself is absent of all soils and subsoils and therefore the rating of Extreme X is applicable. Depths of subsoils encountered during monitoring well drilling in the landholding surround the quarry footprint were between 2.44m and 5.49m.

Backfilling the site with inert material could be viewed as a good approach to increasing the vulnerability rating, *i.e.* provide better aquifer protection in the long term, and proper landscaping and closure of the site will also prevent fly tipping.

#### 3.4.6.12 Water Framework Directive Groundwater Body Status

The Trim Groundwater Body (GWB: IE\_EA\_G\_002) in which the quarry is located is assigned 'Good Status'<sup>10</sup> ([www.wfdireland.ie](http://www.wfdireland.ie)), this applies to both quantitative status and chemical status.

The objectives for the GWB is to protect the current 'Good Status' condition. This requires that the chemical and quantitative status of the Trim GWB needs to be maintained.

With regards to the proposed development, this means that the proposed backfilling should not affect the chemical or quantitative status of the groundwater body.

#### 3.4.6.13 Local Groundwater Supplies

<sup>10</sup> 'Status' means the condition of the water in the waterbody. It is defined by its chemical status and its ecological status, whichever is worse. Waters are ranked in one of 5 classes: High, Good, Moderate, Poor and Bad (WFD, 2010).

Kilmessan Public Supply Well (PWS) is located approximately 750m to the west of the quarry foot print boundary (and planning boundary). The abstraction rate of the PWS is approximately 330-370m<sup>3</sup>/day. In addition there are a number of third party wells which are currently used for domestic and agricultural water supply located in close proximity to the quarry. The majority of the local third party wells are located along the public road to the southwest and southeast of the proposed site.

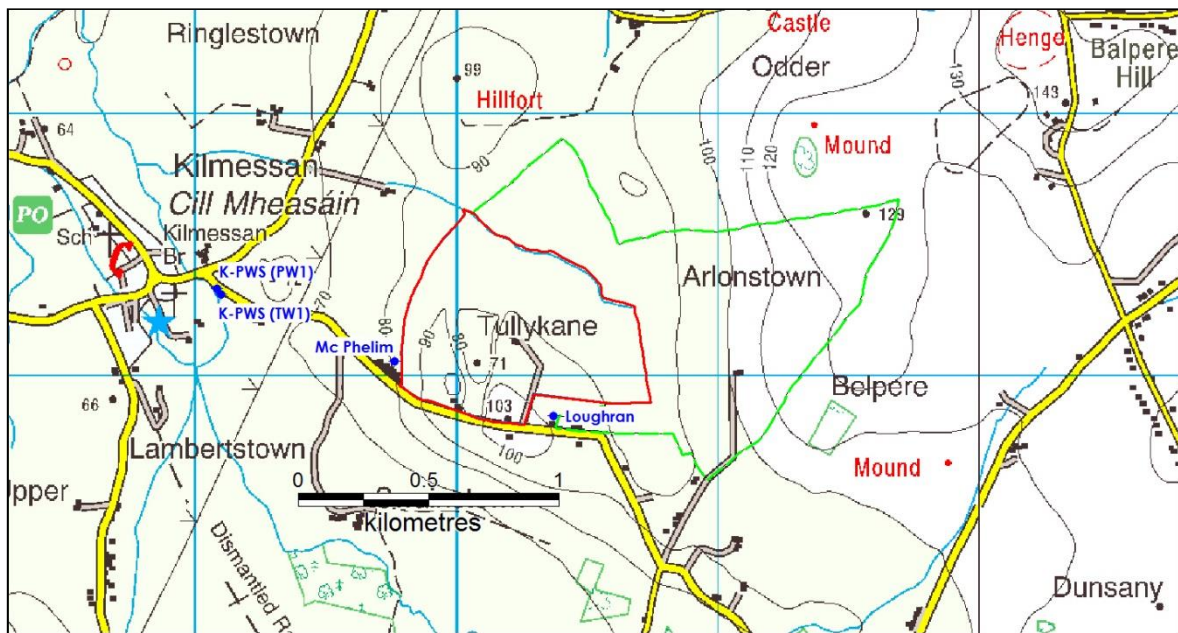
Groundwater level monitoring data is available for a number of the local wells including the Kilmessan PWS well. These data were collected during the pumping test undertaken in 2011.

Third party wells DW-11 (Loughran) and DW-6 (M<sup>c</sup>Phelim), which are located to the south and west of the quarry respectively, were also monitored during the pumping test. Summary details of the third party wells monitored during the 2011 pumping test are shown in **Table G** below. The locations of these wells are shown on **Figure D** below.

As stated above, the groundwater flow direction in the area of the quarry is in a south / south-westerly direction and therefore all the local wells to the south of the site (including Kilmessan PWS) are located down-gradient of the proposed development.

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**Figure D: Locations of Third Party Wells Monitored During Previous Pumping Test**

**Table G: Summary Details of Third Party Wells Monitored During Previous Pumping Tests**

Well Name	Easting	Northing	Distance from Quarry (m)	Ground Elevation (m OD)	Reference Level (m OD)	Well Depth (m)
K-PWS (TW1)	289103	257302	~900	63.873	64.278	103
K-PWS (PW1)	289085	257325	~900	64.758	64.749	103
DW-6 (McPhelim)	289767	257044	~80	-	82.62	37
DW-11 (Loughran)	290374	256837	~100	-	99.48	48.8

#### 3.4.6.13 Designated Sites

The only designated site of relevance to this hydrogeological assessment is the River Boyne and Blackwater SAC/SPA (Site Codes: 002299/004232). A designated site map for the area of the quarry is shown as **Figure 7**.

All other designated site are sufficiently remote from the proposed development site to state with confidence that they are hydrogeologically disconnected from the proposed development site, and therefore cannot be impacted by the proposed development works.

In respects of hydrogeology and hydrology, for the conservation objectives of River Boyne and Blackwater SAC/SPA to be met, then the hydrology and water quality of the river must not be subject to adverse significant impacts either from the proposed project or from in combination effects of other projects.

### 3.4.7 Assimilation Capacity Design for Water Discharge

#### 3.4.7.1 Introduction

This section of the report presents a discharge impact assessment regarding the proposed combined surface water and groundwater discharge from the quarry during the backfilling operations. The aim of this assessment is to determine the likely impacts from the quarry discharge on the receiving waters and to determine compliance with:

- SW Regulation (2009) EQS<sup>11</sup>'s; and,
- Multiple other relevant regulations – by Combined Approach (as outlined below)

This evaluation is made in the context of a pumped discharge (of groundwater and surface water) from the waste site which contains a mix of groundwater and surface water (stormwater) discharge. The maximum discharge flow will comprise the following:

- Groundwater: 0-1,896m<sup>3</sup>/day<sup>12</sup> (~0-22 L/s); and,
- Surface water: 0 to 4000 m<sup>3</sup>/day (no surface water discharge (as currently occurs) to flows generated by a 1 in 100 year 12 hr rainfall event on quarry catchment, *i.e.* surface water that will have to be pumped out of the quarry void).

Please note that these values are conservative and represent the peak discharges of the operational quarry. Our evaluation strategy is to demonstrate that peak discharges can be assimilated, and therefore prove that smaller future discharges can also be assimilated.

The initial discharge from the site enters an ephemeral stream. This stream then discharges to the Skane River downstream of the site, and the Skane River is in turn a tributary to the River Boyne.

#### 3.4.7.2 Evaluation Concept

The following are the key elements of our discharge impact assessment:

- This is a pumped discharge which comprises a mix of 'groundwater' and 'surface water runoff' and is subject to discharge licensing. The sensitivity of downstream surface water receptors to this discharge therefore require consideration and evaluation;
- An upgrade of the on-site wastewater treatment system was proposed as part of the existing quarry permission (planning permission Reference No. TA/802731, ABP Ref: PL17 .233813. The wastewater system receives a small flow from the site office (toilet and kitchen). The discharge is to groundwater, via a secondary treatment system and percolation area. There will be 5 staff at the site and this implies a hydraulic loading of

<sup>11</sup> Environmental Quality Standard.

<sup>12</sup> Flow recorded at end of pumping test.

0.3m<sup>3</sup>/day. The wastewater will be treated in a secondary treatment system and then discharged via subsoil to ground. At this flow rate, and with the proposed treatment, the discharge is insignificant in terms of risk to groundwater quality or surface water quality and it is not considered further in this discharge impact assessment;

- An assessment procedure has been developed by integrating the 'Combined Approach' assessment framework of the UWW Regulations (2007), Habitats Directive assessment requirements, 'High Status' Environmental Quality Standard's (EQS's) of the Surface Water Regulations (2009) and the Salmonid Regulations (1988). The Salmonid Regulations 1988 are relevant in the 'Combined Approach'. Salmon are listed as an Annex II Species under the European Habitats Directive, and are a qualifying interest of the River Boyne and Blackwater cSAC;
- The Surface Water Regulations (2009)<sup>13</sup> provide a basis for evaluation of impact of discharges;
- A Guidance Manual issued by The DOEHLG (WSTG, 2010) provides a framework for assessment of discharges, which has also been applied in the assessment conducted here;
- The receiving waters are defined as: 1) ephemeral stream S1, 2) River Skane, 3) River Boyne. The details of these location are presented below;
- A hydromorphological assessment for stream S1 is completed as required by the Regulations; and,

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➤ <sup>13</sup> These Regulations specify that a waterbody must be maintained at, or improved to, at least 'Good' Status and that no deterioration in status is permitted;

➤ The Agency (EPA) is responsible for assigning status. 'Status' is a descriptor term that integrates ecological and hydrochemical data. 'Status' is a descriptor tool that facilitates catchment comparisons at an EU scale;

➤ Part II, 5. states that 'A public authority shall not, in the performance of its functions, undertake those functions in a manner that knowingly causes or allows deterioration in the chemical status or ecological status (or ecological potential as the case may be) of a body of surface water';

➤ These Regulations specify conditions and concentrations that should be considered in assessment of Status. Biological and hydromorphological quality elements, physiochemical quality elements, general conditions and nutrient conditions, in addition to concentrations for specific pollutants, priority substances and priority hazardous substances are specified in the Schedules 4, 5 and 6 of the Regulations;

➤ With respect to discharge authorisations, these Regulations require public Authorities to ensure that the emission limits laid down in authorisations support compliance with the new water quality objectives / standards;

➤ When the 2009 Regulations refer to 'chemical status', it is in the context of water quality objectives for 'priority and priority hazardous substances'. Ecological status is a function of biological and physiochemical 'supporting conditions'. Discharges of treated wastewater and stormwater runoff have the potential to impact biological and physiochemical conditions. Treated wastewater does not contain the 'priority and priority hazardous substances' listed in the Regulations.

- A screening assessment was completed with existing site monitoring data (data is available from 2001-2016). Where required an assimilation capacity simulation model was then applied for different discharge volume scenarios, and mixes (of groundwater and surface water) in order to explore compliance for the proposed discharge under varying meteorological and hydrological conditions (*i.e.* a dry spell with only steady state groundwater being pumped from the quarry, various mixes of groundwater and surface water). These details are outlined below.

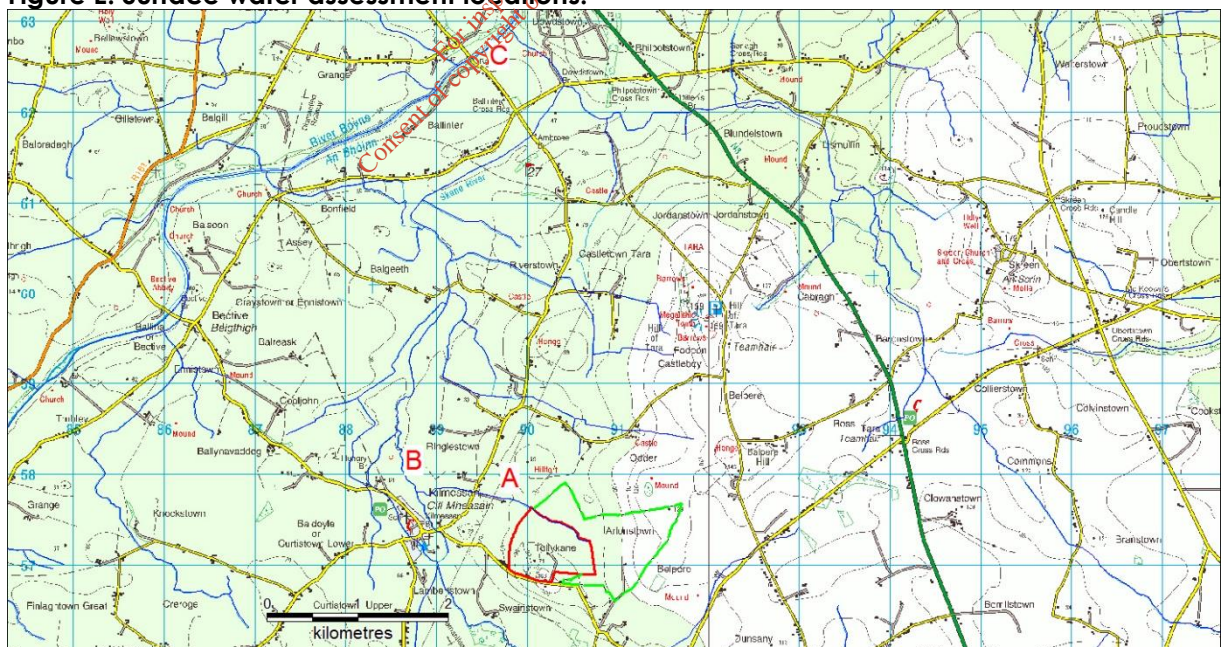
### 3.4.7.3 Discussion on the Receiving Environment

The overall aim of the Water Framework Directive and the consequent Surface Water Regulations 2009 is to ensure no deterioration in status of water bodies. The impact of discharges should be evaluated at the scale at which water bodies/protected areas are delineated/defined. Therefore the following evaluation locations are completed:

1. Ephemeral stream
2. Skane River
3. River Boyne (the River Boyne downstream of the site is part of the River Boyne and River Blackwater cSAC, Site Code: 002299)

The location of these discharge evaluation locations are shown on **Figure E**.

**Figure E: Surface water assessment locations.**



With regards to the Surface Water Regulations (2009) – Table 6, Schedule 4 outlines the hydromorphological quality elements supporting the biological elements which are to be taken into account when calculating ecological status. For river water bodies, these are:

- Hydrological regime
  - Quantity and dynamics of water flow
  - Connection to groundwater bodies
- River continuity
- Morphological conditions
  - River depth and width variation
  - Structure and substrate of the river bed
  - Structure of the riparian zone

With regards to the Surface Water Regulations (2009) – Table 7, Schedule 4 outlines the physico-chemical quality parameters supporting the biological elements which are to be taken into account when calculating ecological status. For river water bodies, these are:

- transparency
- thermal conditions
- oxygenation conditions
- acidification conditions
- salinity
- nutrient conditions

#### 3.4.7.4 Hydromorphological Assessment

Stream S1 is known to be ephemeral. During dry periods when there is no discharge from the quarry there is no flow in this stream. Natural flow in the stream only occurs when there is sufficient rainfall to generate runoff within the catchment. When there is a dry period the flow in the stream slowly reduces to zero. The addition of groundwater and precipitation falling within the quarry to the stream by way of pumping from the quarry (to keep the quarry void dry during backfilling) will be an ongoing flow throughout the operational phase of the waste site. This means that the hydrological condition of the stream S1 will improve from its current state, and stream continuity will be established. This will be a benefit to ecological life along the stream. Also, any improvement in hydromorphological condition of stream S1 will also improve conditions in the downstream River Skane.



When dewatering of the quarry ceases towards the end of the backfilling operation, groundwater levels below the site will rise back to pre-development levels, and this is likely to result in increased baseflow to stream S1. This will also benefit future flows in stream S1.

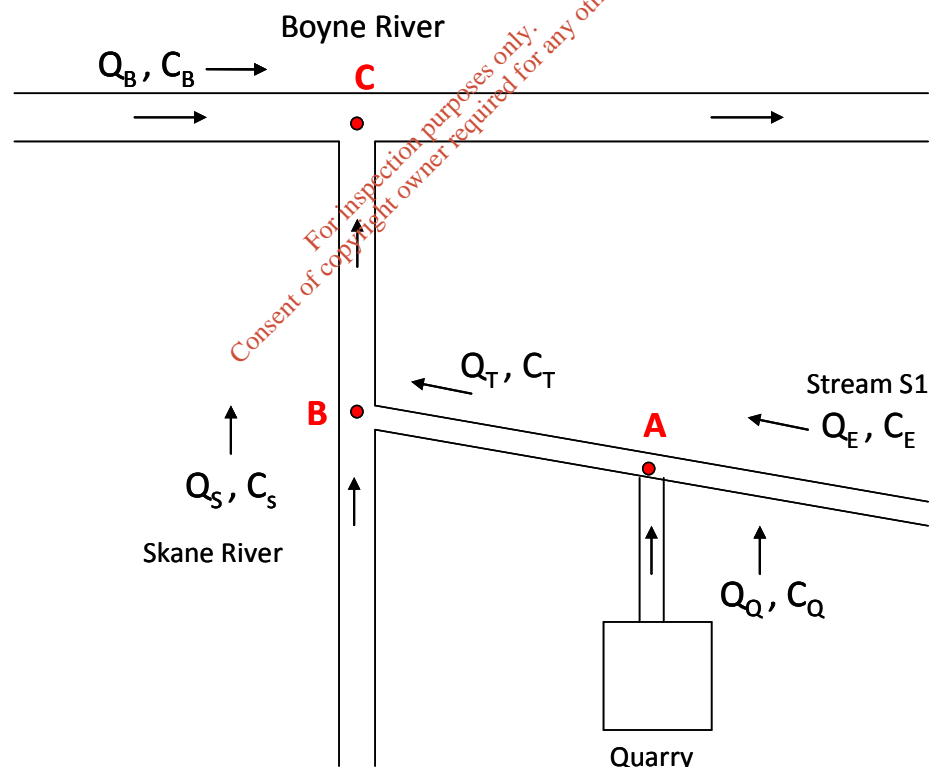
It should also be noted that the groundwater abstracted from the aquifer at the quarry would eventually end up in the River Skane anyway, albeit more slowly. This is because groundwater in the area will flow towards surface water discharge points, *i.e.* rivers are large groundwater drains. Therefore, there will be negligible impact on the hydrodynamics of the River Skane as a result of the proposed quarry dewatering, as the water will end up in the river anyway, albeit slightly further downstream.

#### 3.4.7.5 Physico-Chemical Assessment

A schematic of the surface water flow system downstream of the quarry discharge point is shown in

**Figure F.** The impact of discharge on water quality from the site has to be established at three locations, denoted A, B and C as shown. Location A is the point at which the site discharge enters the stream S1, B is the point at which the stream S1 enters the Skane River, while C is the point at which the River Skane joins the Boyne River.

**Figure F: Schematic of discharge assessment locations and flow / mass loading descriptors.**



Given the hierarchical nature of the surface water system, (*i.e.* site discharges to S1 which discharges to the River Skane which in turn discharges to the Boyne) it follows that if water quality criteria are met at point A, then it will also be met at all subsequent points. Therefore, the logical first step in the physico-chemical assessment is to assess the quality of the quarry discharge itself and its impact on the receiving water of S1. If this can be shown to meet the relevant physico-

chemical quality standards to be taken into account when calculating ecological status, this will ensure no deterioration in the status of water bodies receiving the future site discharge. While no status has yet been defined for the Stream S1, the Skane Lower (IE\_EA\_07\_1629) which exists downstream of the quarry site is assigned an overall 'Moderate Status'. The primary risk posed to is from diffuse sources and morphological impacts.

#### 3.4.7.5.1 Assessment of Available Monitoring Point Water Quality Data

An existing discharge licence D/L13/07 from the quarry to S1 has required regular monitoring of surface water quality up and downstream of the discharge location. As a result, water quality data is available from upstream and downstream of this discharge location for the past 15 years (some data was collected under previous discharge licence (00/3).

The data shows the general improvement in water quality between upstream and downstream of the discharge location, indicating the beneficial effect of past quarry discharges. This is particularly noticeable for recorded Nitrate concentrations, with the quarry discharge substantially diluting the concentration of  $\text{NO}_3$  present in S1. Conductivity of the stream rose slightly downstream of the discharge, which is to be expected given the discharge is mix of surface water and groundwater, which is likely to be more mineralised (i.e. groundwater has a higher electrical conductivity than surface water).

#### Total Suspended Solids (TSS)

The TSS concentrations in the quarry discharge are well below the limit of 25 mg/L set out in S.I. No. 293/1988. This is reflected in the low average concentrations shown in Stream S1. Therefore no assimilation assessment is required for TSS. The discharge complies with Salmonid EQS of 25 mg/L.

We have also assessed temperature, DO, pH, EC, BOD, and all available indicates that the site discharge improves water quality in Stream S1, there is no assimilation assessment required for these parameters.

#### Nitrate / Ammonia / Nitrite

There will be no further use of explosives at the site so the potential for impact on surface water from introduced ammonium nitrate explosives will not exist in the future. As there has not been a blast at the site since 2010/2011 there is limited to no potential for any residual ammonium nitrate residue in water at the site.

#### 3.4.7.1.2 Surface water assessment Conclusions

- Comparison of historical surface water quality monitoring for the existing discharge from the quarry shows that it generally has a positive impact on the receiving water, in that it improves water quality in stream S1. As a result there will be no negative impacts at either Location A (Ephemeral Stream), Location B (River Skane), or Location C (River Boyne).
- The discharge of groundwater and surface water from the quarry also adds flow to a stream that is sometimes dry. From a hydromorphological perspective this is positive.

- Comparison of existing discharge water quality and future potential groundwater quality shows that most parameters are below required EQS's and therefore no assimilation assessment was required.

### 3.4.8 Hydrogeology and Hydrology Impact Assessment

#### 3.4.8.1 Description of the proposed development

The proposed development comprises backfilling 46.5 Ha (excluding proposed public Amenity Park) of open void at a rate of 400,000 tpa (tonnes per annum) over a period of 14 years. A total of 5.6million tonnes will be imported to the site over that period. Imported fill will comprise inert soil and stone (EU Waste Class 17 05 04).

The definition of inert waste from Article 2 of the Landfill Directive is as follows:

***"Inert waste"** means waste that it does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater".*

Due to the nature of the proposed development potential impacts on groundwater will be qualitative (water quality) rather than quantitative (i.e. levels and flows). It is proposed to cease dewatering of the quarry void after the backfilling is complete. The final fill level will be at least 8-10m above the recovered groundwater level which is estimated to be 80-85m OD).

The proposed infill material is inert soil and stone and therefore no harmful or toxic contaminants are expected to be present. Potential impacts to groundwater at this site, which are common to all construction sites, would be from potential sources such as hydrocarbon/chemical spillage during the excavation and infilling works. The potential pathways will be via groundwater recharge and groundwater flow.

Downstream surface waters are also at risk in terms of impacts from poor quality quarry discharge (contaminated by suspended solids) during the backfilling period. Once the backfilling is completed, dewatering will be stopped and there will be no further risk from this source to surface waters. Mitigation measures for preventing downstream surface water quality impacts from quarry discharge are outlined below.

#### 3.4.8.2 Construction / Backfilling Phase

##### 3.4.8.2.1 Impacts on Groundwater Vulnerability Rating due to Change of Subsoil Thickness

As discussed above it is proposed to import soil and stone and fill the pit over an area of 46.5 Ha to an average depth of ~15m. The total infill is in the order of ~5.6 million tonnes. The groundwater vulnerability rating after the fill will be improved as the additional fill will provide additional aquifer protection at the site.

Pathway – Recharge.

Receptor – Groundwater vulnerability.

Pre-Mitigation Potential Impact – Direct, positive, slight, permanent, high probability, impact on groundwater vulnerability.

Impact Assessment and Proposed Mitigation Measures:

In terms of impacting on the groundwater vulnerability of the site, the importing of the inert fill will have a positive effect on the site in that the groundwater vulnerability rating will be lower. No direct mitigation measures in relation to groundwater vulnerability are required.

Residual Impact: Direct, positive, slight, permanent, high probability, impact on groundwater vulnerability

Significance of Effects: No significant residual impacts on groundwater vulnerability are expected.

#### 3.4.8.2.2 Impacts on Groundwater Quality due to inert fill material

The proposed development comprises importing approximately 5.6 million tonnes of inert soil and stone (EU Waste Class 17 05 04). Infilling of the site with inert soil should pose a low risk to groundwater quality regardless of the vulnerability rating as no harmful contaminants will be present. In addition, inert soil and stone will not contain either organic matter or liquids that will form a source of organic contaminants or microbial pathogens, nor provide a substrate to feed microbial pathogens. Therefore no significant groundwater quality impacts are anticipated.

Pathway – Groundwater flow.

Receptor – Groundwater quality

Pre-Mitigation Potential Impact – Indirect, negative, imperceptible, long term, low probability, impact on groundwater quality.

Impact Assessment and Proposed Mitigation Measures:

Infilling of the site with inert soil will pose a low risk as no harmful contaminants should be present. Mitigation measures relating to hydrocarbon/chemical spills and leaks are dealt with further below.

In addition, to ensure that there is no washout of fines and sediments (from the imported fill) down through the existing underlying quarry floor it is proposed that all remaining site investigation holes on the floor (~76 no.) will be sealed and plugged. The 2 no. pumping wells and all remaining monitoring wells on the quarry floor will also be backfilled and grouted up to current quarry floor level.

Prior to the backfilling commencing, it is also proposed to place a layer of low permeability clay over the area of the identified fractures zones below the quarry floor (i.e. 2 no. north/south trending fracture zones and the 1 no. east / west trending fracture zone). The low permeability clay layer will prevent any potential washout of fine and sediments (from the important fill) down into the underlying fracture zones.

Residual Impact: Indirect, negative, imperceptible, long term, low probability, impact on groundwater quality.

Significance of Effects: No significant residual impacts on groundwater quality are expected.

#### 3.4.8.2.3 Impact on Local Well Supplies

As assessed above, all the private wells to the south of the site including the Kilmessan PWS wells (southwest) are potentially located down-gradient of the proposed development.

Pathway – Groundwater flow.

Receptor –Local Wells

Pre-Mitigation Potential Impact – Indirect, negative, imperceptible, long term, low probability, impact on the local well

Impact Assessment and Proposed Mitigation Measures:

Infilling of the site with inert soil will pose a low risk as no harmful contaminants should be present. No direct mitigation is required in relation to inert fill and potential impacts on the local well. Mitigation measures relating hydrocarbon/chemical spills and leaks are dealt with further below.

A groundwater quality monitoring programme is presented in Section 4 below. There is an extensive network of existing monitoring wells at the site and there will be monitored regularly for groundwater levels and groundwater quality.

The impacts of groundwater dewatering (drawdown along fracture zones) from the current quarry void will reduce over time as the quarry is backfilled and the potential for water level drawdown reduces. As outlined above the main issues are related to maintenance of good groundwater quality and preventing washout of fines into the two main fracture zones that have been identified below the site.

Residual Impact: Indirect, negative, imperceptible, long term, low probability impact on the local well.  
Significance of Effects: No significant residual impacts on local wells are expected.

#### 3.4.8.2.4 Impacts on Surface water Quality due to Quarry Discharge

During backfilling phase there will no pathway for surface water to leave the site other via the existing dewatering system.

The quarry infilling will require significant earthworks and site levelling, and there is a high risk of poor quality surface water runoff (*i.e.* suspended sediments) entering the dewatering system and being pumped off-site to local surface waters.



It is intended that water discharging from the site will have the same positive effects on downstream water quality as it has currently. An assimilation capacity assessment for discharges from the backfill operations is outlined in Section 3 above.

Pathway: Quarry dewatering system.

Receptor: Local surface waters.

Pre-Mitigation Potential Impact: Indirect, negative, significant, short term, low probability impact on local surface water quality.

Proposed Mitigation Measures:

Management of surface water runoff will be undertaken as follows:

- The 2 no. existing sumps will be upgraded to ensure that no surface water runoff from the quarry floor can enter the sumps (*i.e.* they will be used solely for groundwater pumping). All existing quarry floor drains feeding into the sumps will be blocked;
- The floor of the quarry will be divided up into a network of compartments by placing linear earthen berms (0.5 – 1.0 high) to control surface water runoff;
- The compartments will make management of surface water runoff more manageable and each compartment will have a sump for pumping of surface water;
- Surface water from each of the compartments will be pumped to a newly constructed settlement pond or series of settlements ponds for removal of suspended sediments; and,
- The infilled area will be seeded for establishment of grassland at the soonest opportunity to avoid erosion.

Post-Mitigation Residual Impact: Indirect, slight, temporary, low probability impact on local surface waters.

Significance of Effects: No significant residual impacts on the surface water environment are expected.

#### 3.4.8.2.5 Water Quality Impacts on the River Boyne and Blackwater SAC/SPA

The River Boyne & Blackwater SAC/SPA is located approximately 5km downstream of the proposed development site and therefore only indirect impacts are possible during the infilling phase.

Pathway – Groundwater and the surface water flow.

Receptor – River Boyne & Blackwater SAC/SPA

Pre-Mitigation Potential Impact – Indirect, negative, imperceptible, temporary, low probability impact on the River Boyne & Blackwater SAC/SPA

#### Impact Assessment and Proposed Mitigation Measures:

The mitigation measures relating to surface water runoff proposed in Section 3.2.4 above will ensure no significant impacts on local surface waters will occur.

In addition, backfilling of the quarry void will be completed using inert fill, and this will ensure limited potential for impact on groundwater and surface water quality.

This will be achieved by:

- Sourcing material that is proven to be inert prior to transport to the Tullykane site;
- Pre-agreed source sites for inert material ensuring; no pollutants, unauthorised material, invasive species.
- The site will operated under an Environmental Management System
- All required pollution prevention measures will be implemented at the site.
- The operator will prepare and implement an Emergency response procedure.
- The operator will complete environmental monitoring, including local groundwater and surface water monitoring.
- A phased restoration of the site will be implemented, and end with the closure of site.
- The operator will have a documented waste recording procedure for all material entering the site.
- No unauthorised dumping of waste will be allowed at the site.

Therefore, for the above reasons and these additional on-site controls no impacts on the downstream River Boyne & Blackwater SAC/SPA are anticipated.

Residual Impact: No impacts on River Boyne & Blackwater SAC/SPA.

Significance of Effects: No significant residual impacts on the River Boyne & Blackwater SAC/SPA are anticipated.

#### 3.4.8.2.6 Oils and Fuel Spillages

Accidental spillage during refuelling of construction/excavation plant with petroleum hydrocarbons is a significant contamination risk to soils, groundwater, and associated ecosystems, and to terrestrial ecology. The accumulation of small spills of fuels and lubricants during routine plant use can also be a contamination risk. Hydrocarbon has a high toxicity to humans, and all flora and fauna, including fish, and is persistent in the environment. It is also a nutrient supply for adapted micro-organisms, which can rapidly deplete dissolved oxygen in waters, resulting in death of aquatic organisms.

Pathway – Groundwater flow (no surface water link available).

Receptor – Groundwater quantity.

Pre-Mitigation Potential Impact – Indirect, slight, short term, low probability, impact on groundwater and surface water quality.

Proposed Mitigation Measures:

Proposed mitigation measures are outlined as follows

- All on site refueling will be completed in a designated area;
- There is an existing bunded and covered fuel tank within the quarry, and this will be used. A new oil interceptor will be installed at this existing fuel tank;
- All plant and machinery will be serviced before being mobilised to site, and regular leak inspections will be completed during the backfilling works;
- No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed; and,
- An emergency spill kit with oil boom, absorbers etc. will be kept on site for use in the event of an accidental spill.
- Site operatives will be trained in the correct use of the spill kits.

Post-Mitigation Residual Impact: Direct/Indirect, imperceptible, short term impact on groundwater quality

Significance of Effects: No significant residual impacts on the water environment.

#### 3.4.8.3 Post Restoration Phase

The post infilling phase of the development will be to an agricultural after-use and therefore no significant surface water or groundwater quality impacts are anticipated.

All final ground levels will be landscaped and seeded. Runoff will filter through grassed areas and will drain to surrounding watercourses to the north and west. Groundwater will rise (once dewatering is ceased) and will retain its pre-development natural levels, but will vary seasonally based on rainfall inputs (by recharge).

#### 3.4.8.4 Cumulative Hydrogeological Assessment

The only other land use activities visible in the area are existing farming operations and single dwelling houses. There will be no significant in combination hydrological and hydrogeological impacts resulting from this project, and other local existing developments or projects and plans. The proposed development will ultimately result in the cessation of dewatering at the quarry and this will have long term benefits to the local groundwater system, and surface water system.

### 3.4.9 Proposed Water Monitoring plan

#### 3.4.9.1 Groundwater Monitoring Plan

There is an extensive network of monitoring wells at the site. They will serve two purposes. They will firstly allow the groundwater levels at the site to be monitored. Secondly the wells will allow ongoing monitoring of groundwater quality (by allowing extraction of groundwater samples for laboratory analysis) to demonstrate that any proposed future backfilling is not impacting on local groundwater quality. Groundwater quality monitoring should be completed quarterly during backfilling, and annually thereafter for two years. The proposed monitoring suite is shown in **Table H**. The locations of the proposed groundwater monitoring wells are shown on **Figure 8**.

**Table H. Groundwater Quality Monitoring Suite**

Parameter	Monitoring Frequency	Analysis Method/Technique
pH	quarterly	pH electrode/meter
BOD	quarterly	Standard method
Ammonia (as N)	quarterly	Standard method
Nitrate	quarterly	Standard method
Total N (as N)	quarterly	Standard method
Ortho -P (as P)	quarterly	Standard method
Total Dissolved Solids (TDS)	quarterly	Standard method
Total Petroleum Hydrocarbons (TPH)	quarterly	Standard method
DRO	quarterly	Standard method
PRO	quarterly	Standard method
Total Coliforms	quarterly	Standard method
Faecal Coliforms	quarterly	Standard method

#### 3.4.9.2 Surface Water Management Plan

Monitoring of quarry discharge quality/volumes and local surface water quality (*i.e.* Stream S1) is currently undertaken at the site. Monitoring of discharge volumes is continuously monitored using a v-notch weir and data logger and water quality monitoring is carried out monthly in accordance with the discharge licence. It is proposed to continue this monitoring during the backfilling phase and for a period of two years thereafter.

### 3.4.10 Conclusions and Recommendations

The conclusions of this hydrogeological / hydrological assessment are as follows:

- A hydrological and hydrogeological assessment of the proposed backfilling works has been completed;
- Due to the nature of the proposed development being a backfilling operation in an existing open quarry, the infilling of the site will improve groundwater vulnerability and protect the underlying aquifer;
- The proposed fill will be made up of inert soil and stone, and therefore the potential for groundwater or surface water contamination is low;
- The existence of two main fracture zones across the quarry site is mitigated through placement of low permeability till over the lines of the fractures at the outset of backfilling. This will prevent fines being washed down into the fracture zones.
- All existing site investigation locations within the quarry floor will be grouted and backfilled to ensure they do not become a conduit for vertical flow into the underlying aquifer;
- The main issue for the proposed backfilling works is the requirement to continue dewatering the quarry floor while backfilling operations are ongoing. Therefore during the works there is potential for generation of high TSS runoff in pumped water. However, the water is fully contained within the floor of the quarry and will be treated in settlement ponds and sumps, prior to pumped discharge from the site. It is proposed to use liner berms and compartments to manage surface water on the floor of the quarry during backfilling. The existing sumps will be used solely for groundwater pumping and all surface water runoff will be sealed off;
- The receptor at most risk during the infilling works will be local surface water quality in terms of potential impacts from pumped water that may contain suspended solids. Mitigation for protection of surface water and groundwater, and water quality monitoring plan are outlined in this document;
- The majority of the private well supplies in the vicinity of the site (including the Kilmessan PWS) are located to the south, southwest and southeast of the site and are therefore located down-gradient of the proposed development. However, due to the proposed nature of the infill material (*i.e.* inert soil and stone) no water quality impacts on these wells are anticipated;
- A monitoring plan for groundwater and surface water is proposed and will be implemented by the Applicant; and,



- Finally, there will be no significant indirect adverse hydrological or hydrogeological impact on the River Boyne & Blackwater SAC/SPA, the local aquifer or groundwater supplies in the area due to the backfilling and future use of the land for amenity and grazing. Also, there will be no significant in combination hydrological or hydrogeological impacts resulting from this project and other local projects.

#### 3.4.10 References

1. Environmental Protection Agency (2003): Advice Notes on Current Practice (in the Preparation of Environmental Impact Statements);
2. Environmental Protection Agency (2002): Guidelines on the Information to be contained in Environmental Impact Statements;
3. Environmental Protection Agency (2011): BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities;
4. Institute of Geologists Ireland (2013): Guidelines for Preparation of Soils, Geology & Hydrogeology Chapters in Environmental Impact Statements;
5. National Roads Authority (2005): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes; and,
6. Hydrological/Hydrogeological Impact Assessment Report in Relation to the Proposed Backfilling of Kilmessan Quarry, Tullykane, Kilmessan, Co. Meath – Hydro Environmental Services, Dungarvan, Co. Waterford – Dec 2016
7. Kilsaran Concrete proposed quarry development and Readymix plant at Tullykane, Kilmessan, Co. Meath EIS Sept 2008

## 3.5 Climate

### 3.5.1 Introduction

The Bruntland Commission stated “Sustainable development is the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN 1987). There is no greater challenge to meeting the latter obligation than the issue of human-induced global climate change. Developments can have implications on a national or global scale, where for example, it may represent a significant proportion of the national contribution of greenhouse gases. In the context of most Environmental Impact Statements however, climate is restricted in scope to the local climatological conditions or "microclimate" of an area, such as local wind flow, temperature, rainfall or solar radiation patterns.

For the purposes of Environmental Impact Assessment, a development may be seen to have potential climatic implications if its emissions are likely to alter meteorological conditions with possible weather effects.

This section of the EIS addresses the issues related to climate for the proposed development in the Tullykane quarry site, and its impact on the climate of the application site and its environs as a result of the activities been undertaken.

The prevailing weather systems are described with emphasis on the long term patterns and trends. It involves an assessment of the prevailing climatic conditions, and assesses the potential impact of the development on the latter.

### 3.5.2 Baseline Environmental Study

#### 3.5.2.1 Outline of the Baseline Study

The objective of this study was to:

- Assess the prevailing climatic conditions of the development area on a local and regional level.
- Determine the impact, if any, of the development on the local microclimate and regional macroclimate.
- Determine any interaction between other aspects of the development and the climate of the area.

#### 3.5.2.2 Climate

The Fifth Assessment Report of the Inter-Governmental Panel on Climate Change (IPCC 2013) states that “Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes. It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.

Cumulative emissions of CO<sub>2</sub> largely determine global mean surface warming by the late 21<sup>st</sup> century and beyond. Most aspects of climate change will persist for many centuries even if

emissions of CO<sub>2</sub> are stopped. This represents a substantial multi-century climate change commitment created by past, present and future emissions of CO<sub>2</sub>".

As a member of the EU, Ireland is a signatory nation to the Kyoto Protocol, and is obligated to cut CO<sub>2</sub> emissions to 13% above 1990 levels. There have been substantial reductions in Ireland's Greenhouse gases (GHG) emissions in recent years, due in significant part to the impact of the economic downturn. Under the Kyoto Protocol, Ireland's total emissions are limited to an average of 62.8 Mt CO<sub>2</sub>eq per annum for the first commitment period 2008-2012.

By 2012, Ireland was 5.68 Mt CO<sub>2</sub>eq below the Kyoto commitment for the period, and thus broadly on track to meet its commitment under the Kyoto Protocol first commitment period. However, when the impact of the EU Emissions Trading Scheme and forest sinks are taken into account, Ireland exceeded the Kyoto limit by 2.1 Mt CO<sub>2</sub>eq (EPA 2104a).

Although Ireland is on track to meet its Kyoto second commitment period 2013-2030 targets, there remains significant risk that these will not be met, even under the most ambitious emission reduction scenario. Total national GHG emissions are projected to decrease by an average of 0.4% per annum out to 2020, if all national policies are implemented and delivered.

Emissions are projected to increase in 2020-2030 (12% in total), with strong growth in emissions from transport and agriculture, indicating that Ireland is not on a pathway to a low-carbon economy (EPA 2014b). Thus, Ireland needs to develop as a low carbon economy in order to meet future targets, rather than rely on economic recession.

Air quality in Ireland is of a high standard across the country and is among the best in Europe, meeting all EU air quality standards in 2010. This is due largely to prevailing clean Atlantic air and a lack of large cities and heavy industry. Over the past decade, levels of particulate matter have decreased in cities and large urban areas, arising principally from improvements in vehicle engine technology.

With regard to air emissions, the strategies implemented to achieve compliance with the EU National Emissions Ceilings Directive have successfully controlled emissions of sulphur dioxide, ammonia and volatile organic compounds. Emissions of all three are expected to remain below the prescribed ceilings. However, levels of nitrogen oxides are expected to remain above Ireland's national emission ceiling in the short term due to sustained emissions from road transport.

For Ireland to comply with its international commitments on air quality and air emissions, industrial emissions of pollutants to air must continue to be rigorously controlled; policies must be implemented to increase the use of alternatives to the private car and improve efficiencies of motorised transport, which accounts for 40% of national energy consumption (SEI 2009).

Government departments, national agencies and local authorities must make air quality an integral part of their traffic management and planning processes. Households and businesses must use more efficient methods to burn fuel, and shift from solid fuel to cleaner alternatives including gas.

The World Meteorological Organization (WMO) recommends that climate averages are computed over a 30 year period of consecutive records. The period of 30 years is considered long enough to smooth out year to year variations. By collecting weather data from around the country every hour and by analysing these records over a long period of time, 30 year average values are calculated.

Met Éireann now reference 1981 to 2010 as the baseline period for day-to-day weather and climate comparisons (Met Éireann 2012). The closest synoptic station to the Tullykane site is at the Teagasc facility at Grange, Dunsany, c. 3.5km south east of the site. The current station was commissioned in 2006, replacing a manual climate station which was installed at Dunsany in 1963, possibly explaining why Met Éireann do not give 30 year averages for the station. The next nearest synoptic station is Dublin Airport, c. 45km southeast of the site, for which 1981-2010 30 year weather averages are available.

Ireland has a typical temperate maritime climate, with relatively mild, moist winters and cool, cloudy summers. The prevailing winds are westerly to south-westerly. For the greater part of the year, warm maritime air associated with the Gulf Stream helps to moderate the climate from the extremes of temperature experienced by many other countries at similar latitude. The average humidity is high. Annual average precipitation is highest on the west coast and in inland areas of high relief.

#### 3.5.2.2.1 Rainfall

Rainfall in Ireland normally arises from Atlantic frontal systems, which travel in a north-easterly direction delivering cloud and rain. Highest rainfall occurs in the Western half of the country and on high ground; rainfall generally decreases towards the Northeast (See Figure 3.5.1).

Averaged over all Ireland, the average annual rainfall is approximately 1230mm. The driest seasons are spring and summer, with an all-Ireland average of approximately 260 mm, autumn and winter have all Ireland averages of approximately 350mm. The driest months are April, May, June and July, with an all-Ireland average of approximately 80mm each month. February, March, August and September have average rainfall totals of approximately 100mm, while October, November, December and January have all Ireland averages of approximately 130mm.

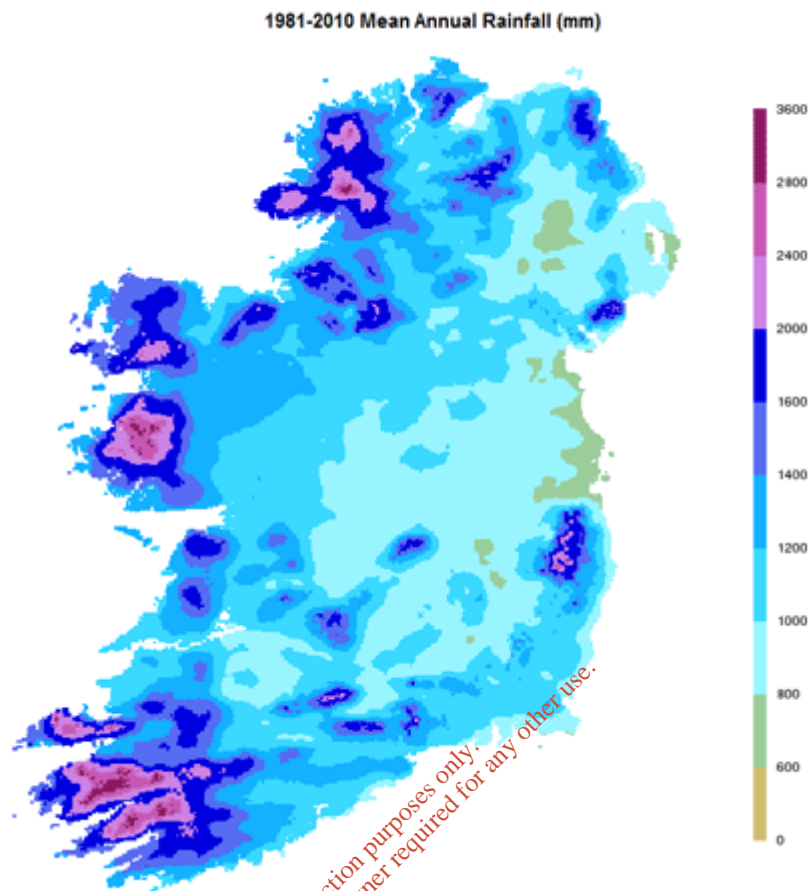


Figure 3.5.1 – Average Rainfall For Ireland (Met Eireann 2014)

On an annual basis, averaged over the country, there has been an increase of approximately 5% in rainfall totals between the two normal periods (1961-1990 and 1981-2010), with the higher increases in the Western half of the country. All seasons show an overall increase in rainfall but there are regional differences. There are decreases of up to 10% in rainfall in the South and East in winter, with corresponding increases in the West and Northwest. Spring and summer show increases of 5-10%. While most months show an increase in rainfall of 5-10%, January and February had decreases of 5-10% in the South and East, while September had a general decrease of up to 10%. In July, the average increase in rainfall was in the order of 15%.

Rainfall data for the area was obtained from Met Eireann. The average annual rainfall (AAR), based on mean monthly rainfall data during the period 1981-2010, is given as 758.0mm/yr. Long term Potential Evaporation (P.E.) data was also obtained for the synoptic station Dublin Airport. The average P.E. for this synoptic station (based on 1981-2010 average monthly data) is 540mm/year. The Actual Evaporation (A.E.) is taken to be 0.9 of P.E. Therefore, the A.E. at the Tullykane quarry site is estimated at 486mm/yr. The Effective Rainfall (ER) at the site is thus calculated to be 272mm/yr. Further details with respect to the water balance for the site are included in EIS Section 3.4 Water.



### 3.5.2.2.2 Temperature

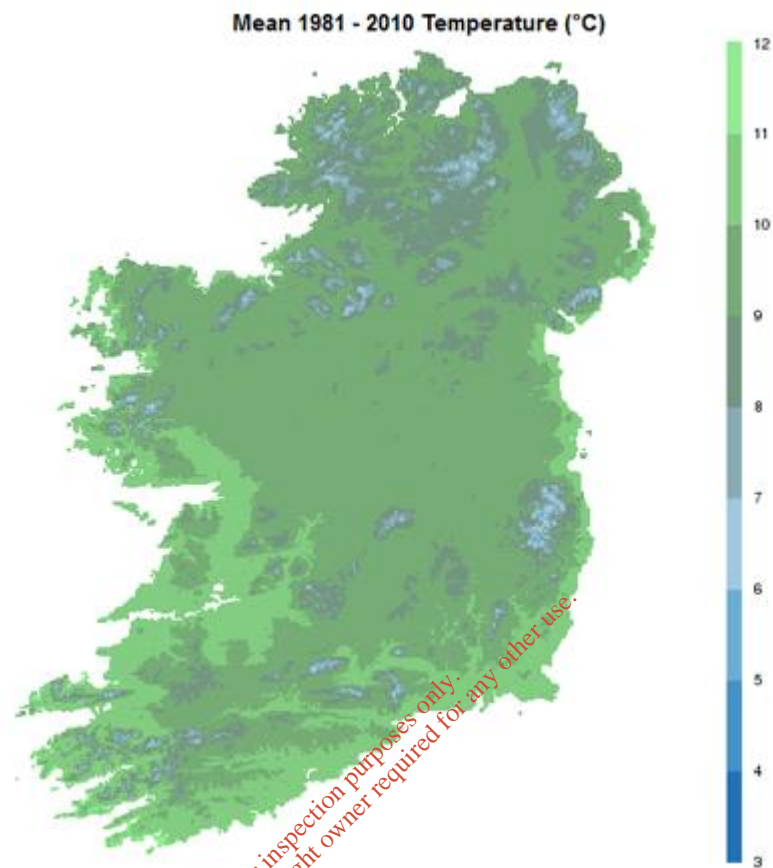


Figure 3.5.2 Average Temperature for Ireland (MET Eireann 2010)

The temperature regime in Ireland is greatly affected by the moderating effect of the sea, and height above sea level. Mean annual temperatures generally range between 9°C and 10°C with the higher values in coastal regions. Summer is the warmest season, followed by autumn, spring and winter.

Highest temperatures occur inland during the summer, with mean seasonal maxima between 18°C and 20°C while highest values occur in coastal regions during the winter. July is the warmest month, followed by August and June; the coldest month is January followed closely by February and then December.

Generally, there has been an increase of approximately +0.5°C in mean temperature between, the 1961-1990 and the 1981-2010 periods, with the highest increases in the Southeast.

Maximum and minimum temperatures have also increased by approximately +0.5°C. All seasons show a rise in mean temperature with the spring and summer seasons displaying the largest differences between the two periods of approximately +0.7°C. Almost all mean monthly temperatures show an increase, except October and December, which show small decreases of up to -0.2°C in the West and Northwest.

The average daily air temperatures at Dublin Airport (1981-2010) range from 5.3°C to 15.6°C.

These values can be considered comparable to those expected at the application site.

### 3.5.2.2.3 Wind

The prevailing wind direction over Ireland is between south and west. Average annual wind speeds range from 3m/s in parts of south Leinster to over 8m/s in the extreme north. On average there are less than 2 days with gales each year at some inland places like Carlow, but more than 50 a year at northern coastal locations such as Malin Head. During the course of a typical day, the range (difference between the highest and lowest) of mean hourly wind speed is considerable. At Belmullet, a western coastal station, the mean diurnal range is 11.5m/s in January and is still as high as 8.4m/s in July. At Clones, a typical inland station the mean diurnal range is 8.4m/s in January and 6.2m/s in July. The diurnal variation is much more pronounced in summer than in winter.

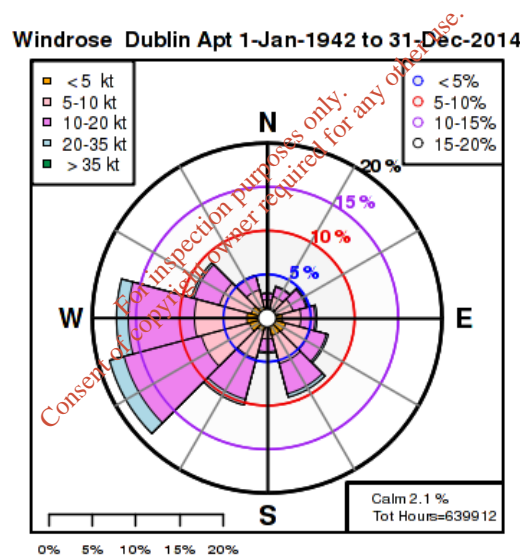


Figure 3.5.3 Average Windspeed at Dublin Airport (2014)

Wind blows most frequently from the south and west for open sites while winds from the northeast or north occur least often. In January the southerly and south-easterly winds are more prominent than in July, which has a high frequency of westerly winds. Easterly winds occur most often between February and May and are commonly accompanied by dry weather.

The prevailing winds in this area are from west to west southwest as illustrated by the Wind Rose for the synoptic weather station at Dublin Airport approximately 35km southeast of the site (See Figure 3.5.2).

### 3.5.3 Assessment of Impacts

#### 3.5.3.1 Direct Impacts

The proposed developments of the quarry restoration or indeed the public amenity park are not singularly or cumulatively of sufficient scale to have any direct or indirect impacts on the regional or local climatic conditions.

#### 3.5.3.2 Do Nothing Impacts

If the proposed development does not attain the requisite planning permissions and licenses to carry out the proposed operations, then inert soils and stone waste materials may have to be transported further afield with a consequential impact in terms of increased exhaust emissions for transport of materials to landfill sites. It is considered that the proposed development will have an imperceptible positive impact with respect to climate due to restoration of the lands to agriculture land. In the event that the local community are not in a position to take over and run the proposed public amenity park then Kilsaran will reserve the right to bring the facility back to agricultural land or forestry which again climatically would be deemed to be an imperceptible positive impact.

#### 3.5.3.4 Interaction with Other Impacts

The effect of climatic conditions (e.g., rainfall, wind, etc.) on other potential impacts of the development (e.g., dust deposition, drainage, etc.), are dealt with in the relevant sections of this EIS. The cumulative impact with respect to the operation of the proposed development has also been taken into consideration throughout the preparation of the EIS.

#### 3.5.4 Mitigation and Monitoring

As the development is not expected to affect the local climate or microclimate of the area, there is no requirement for mitigation or monitoring within this development proposal in respect of climatic issues.

#### 3.5.5 References

1. Met Éireann (2012) A summary of climate averages for Ireland 1981-2010, Climatological Note No.14, Met Éireann, Glasnevin Hill, Dublin 9, Ireland, 16 p.
2. Met Éireann (2014) Online web site, Met Éireann, Glasnevin Hill, Dublin 9, Ireland, [Available at. <http://www.met.ie>]
3. EPA (2014a) Ireland's Greenhouse Gas Emissions in 2012, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, 8 p.
4. EPA (2014b) Ireland's Greenhouse Gas Emission Projections 2013-2030, Environmental Protection Agency (EPA), Johnstown Castle, Co. Wexford, Ireland, 16 p.

5. IPCC (2013) Climate Change 2013: The Physical Science Basis, Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), Cambridge University Press, [Available at [www.cambridge.org](http://www.cambridge.org)]
6. SEI (2009) Energy in Ireland: Key Statistics 2009, Sustainable Energy Ireland (SEI), Dublin 2, Ireland, 31 p.
7. UN (1987) Our Common Future, World Commission on Environment and Development (Bruntland Commission), United Nations, [Available at [www.undocuments.net/ourcommon-future.pdf](http://www.undocuments.net/ourcommon-future.pdf)]

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## 3.6 Air Quality

### 3.6.1 Introduction

This section of the report deals with the issue of air quality associated with the development of the proposed soil and stone recovery facility at Tullykane, Kilmessan, Co. Meath. It will assess the level of airborne dust and particulate matter in the vicinity of the site, the impacts and appropriate mitigation measures, if required, by the applicant to remedy any significant adverse effects on the environment.

### 3.6.2 Study Methodology

The baseline study comprised a desktop review of relevant policy, legislation including guidance with respect to air quality and emissions. Existing operational dust monitoring results from 2011 when the plant was last operational were analysed to evaluate the prevalent air quality conditions during previous operations. From these results an assessment can be made of the impact of the development on the existing air quality of the area.

### 3.6.3 Policy and Legislation

#### 3.6.3.1 Air Quality

The principal national legislation for the control of air pollution is the Air Pollution Act, 1987 (SI No. 6 of 1987). This Act provides a comprehensive statutory framework for the control of air quality by Local Authorities, specifically through 'orders' or 'plans' produced under Part IV Special Control Areas and Part V Air Quality Management Plans and Standards to which Local Authorities must have regard to in planning. Part V of the Act also makes provision for transposing Air Quality Standards into law.

The Act also has relevance to potential nuisance emissions of dust and or odours. Section 24(2) of the Act states 'The occupier of any premises shall not cause or permit an emission from such premises in such a quantity, or in such a manner, as to be a nuisance'.

In order to protect our health, vegetation and ecosystems, EU Directives set down air quality standards for a wide variety of pollutants. The current standards are contained in the Clean Air for Europe (CAFE) Directive (EP & CEU, 2008) and the Fourth Daughter Directive (EP & CEU, 2004). These Directives also include rules on how Member States should monitor, assess and manage ambient air quality.

The CAFE Directive was transposed into Irish legislation as the Air Quality Standards Regulations 2011 (S.I. 180 of 2011), which revoked and replaced three earlier statutory instruments (S.I. 33 of 1999, S.I. 271 of 2002 and S.I. 53 of 2004).



These regulations set limit values/ target values for a range of pollutants, including sulphur dioxide; nitrogen dioxide and other oxides of nitrogen; particulate matter (PM10 and PM2.5); lead; benzene; carbon monoxide; and ozone.

The above directives require that Member States divide their territory into zones for the assessment and management of air quality. The zones adopted in Ireland are Zone A, the Dublin conurbation; Zone B, the Cork conurbation; Zone C, comprising 21 large towns in Ireland with a population >15,000; and Zone D, the remaining area of Ireland.



Under the EU Directives, Ireland is required to monitor a number of air pollutants that have an impact on health and vegetation. These include NO<sub>x</sub>, SO<sub>2</sub>, carbon monoxide (CO), ground level ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), benzene, heavy metals and polycyclic aromatic hydrocarbons (PAHs). Across Europe the most problematic pollutants have consistently been NO<sub>x</sub>, PM and O<sub>3</sub>. Recently PAHs have also been identified as pollutants of concern.

NO<sub>x</sub> refers to the two pollutants nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>). The main sources of these pollutants are vehicle exhausts and combustion sources. Exposure to NO<sub>2</sub> is harmful to health, while NO<sub>x</sub> contributes to the formation of ground-level ozone and acid rain. NO<sub>2</sub> levels across Ireland have remained relatively static since 2002; however, an increasing trend at traffic-impacted sites in Dublin and Cork is emerging. These sites are approaching the 2010 limit value for NO<sub>2</sub> with one exceedance of the limit value recorded in 2009 at Winetavern Street, Dublin. This exceedance occurred before the limit value came into force on 1 January 2010. Figure 3.6.1 below

shows annual mean nitrogen dioxide concentrations from 2002 to 2010 for monitoring sites across Ireland (EPA 2012).

### 2015 Results and trends

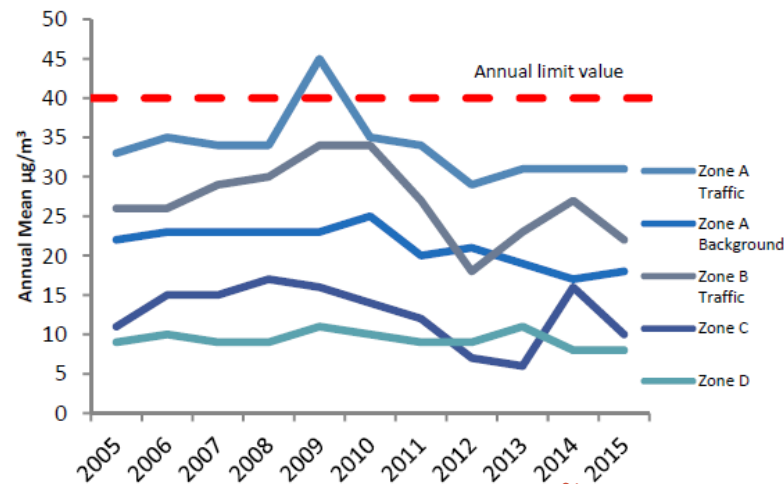
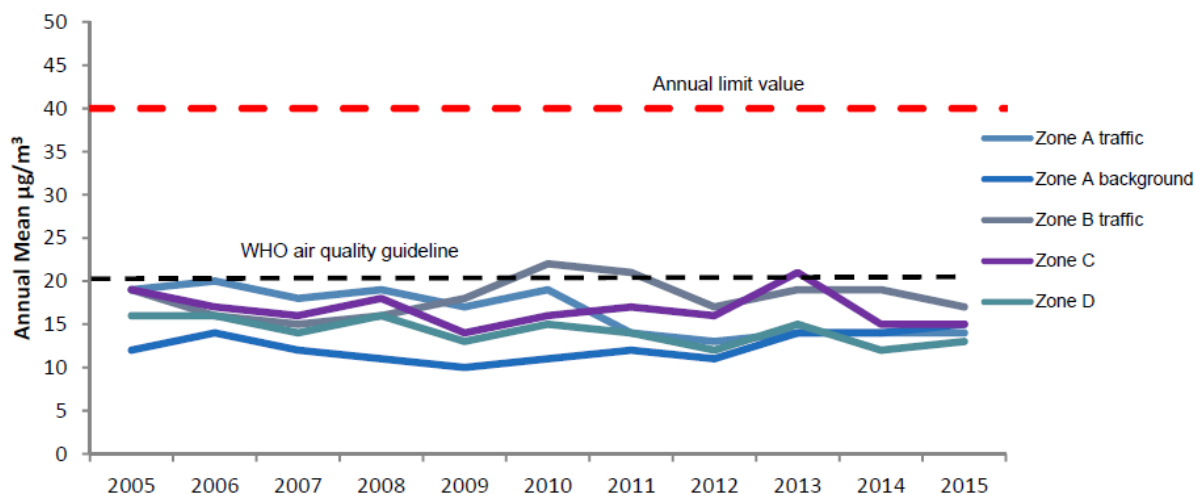


Fig 3.6.1 Trend in NO<sub>2</sub> concentrations for zones in Ireland 2005 - 2015

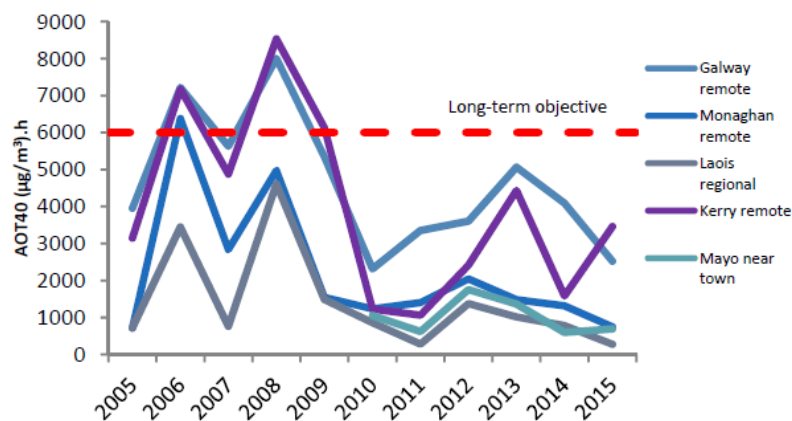
PM<sub>10</sub> and PM<sub>2.5</sub> are particles with diameters less than 10 micrometres and less than 2.5 micrometres, respectively. The health impacts of these small particles relate to their ability to penetrate deep into the respiratory tract. In Ireland the main sources are domestic use of solid fuel and vehicular traffic. PM<sub>10</sub> concentrations show a decreasing trend in cities and large urban areas since 2003. This is mainly due to the decreases in particulate emissions from traffic arising from improvements in vehicle engine emissions. However, this decrease is not seen in smaller towns, where domestic solid fuel emissions are more significant than traffic emissions. Many towns do not benefit from the ban on smoky coal, and often do not have access to cleaner fuel alternatives such as natural gas (EPA 2012). Under the CAFE Directive, Ireland is required to achieve reductions in levels of PM<sub>2.5</sub> of 10% between 2012 and 2020. This reduction is challenging, as it will require an integrated approach across a number of sectors including industrial, transport and residential emissions. Figure 3.6.2 below shows annual mean PM<sub>10</sub> concentrations 2002–2010 for monitoring sites across Ireland.



**Fig 3.6.2 Annual mean PM10 concentrations 2005-2015**

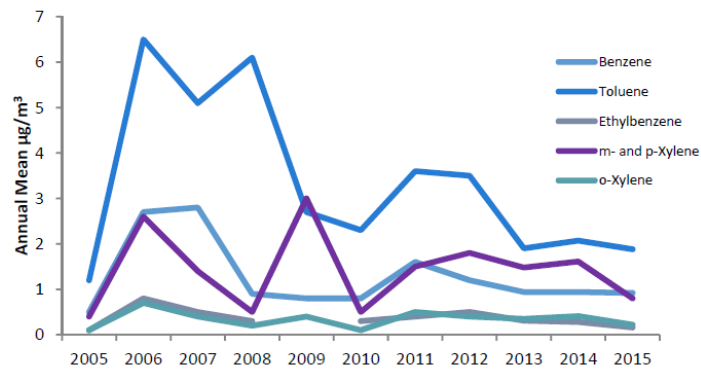
The sources of PAHs include industry, traffic emissions and domestic use of solid fuels such as wood and coal. Long-term exposure to low levels of PAHs may cause a number of diseases including lung cancer. PAHs were monitored in Ireland for the first time in 2009 at five monitoring stations. In 2010, levels at two of the stations were at the limit value of 1 ng/m<sup>3</sup>. Reductions in emissions from traffic and from domestic use of solid fuels are required to reduce ambient levels of PAHs.

Ozone is a gas that is formed as a secondary pollutant at ground-level by the reaction of a mixture of other chemicals – NO<sub>x</sub>, CO and VOCs – in the presence of sunlight. Ozone is a powerful oxidising agent and can affect health and vegetation. Short acute ozone pollution episodes are infrequent in Ireland; however, they have happened in the past, and will happen in the future. They are most likely to occur in summer months when a stable anti-cyclone is established over Ireland, bringing settled, warm weather combined with transmission of polluted air masses from other European countries. Reducing ozone requires limiting emissions of its precursors locally, regionally and globally. The objectives of both the Convention on Long-range transboundary Air Pollution (CLRTAP) and National Emissions Ceilings (NEC) Directive include addressing ground-level ozone. (EPA 2012).

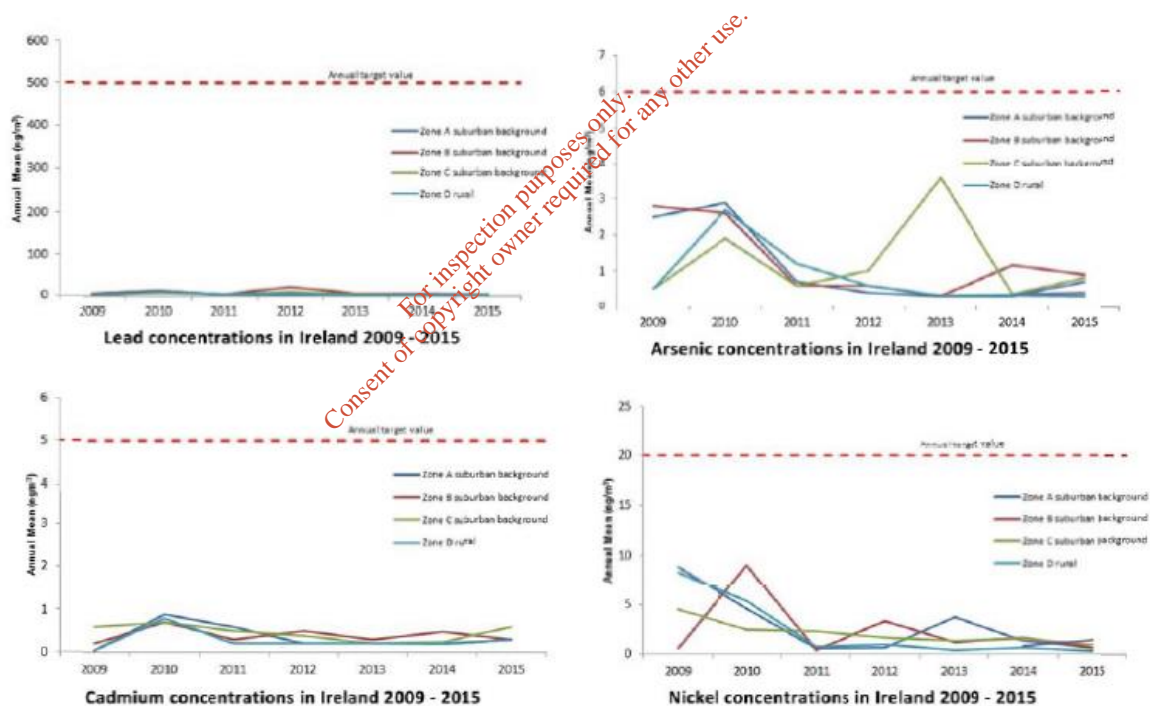


**Fig 3.6.3 Annual Ozone Concentrations at Rural Locations**

The other health-relevant pollutants measured are SO<sub>2</sub>, CO, benzene, lead, arsenic, cadmium, nickel and mercury. Levels of all these pollutants are low in Ireland and below all relevant limit and target values (EPA 2012).



**Fig 3.6.4 Annual mean concentrations for VOC ozone precursors including Benzene at Rathmines, Dublin 2005-2015**



**Fig 3.6.5 Lead, Cadmium, Arsenic and nickel Concentrations in Ireland 2009 - 2015**

In general air quality in Ireland is good and compares favourably with other EU member states, largely as a result of our relative absence of large cities, weather and access to predominantly clean air masses from the south west. However this status is a comparison, relative to our European neighbours many of whom are in exceedance of EU limit values for pollutants such as particulate matter, ozone and nitrogen dioxide. It is also much too dependent on the vagaries of our weather. When we compare our air quality levels to those recommended by the World Health Organisation, the situation is less positive. We face challenges in reducing our levels of particulate matter (both PM<sub>10</sub> and PM<sub>2.5</sub>) and ozone to below those recommended by the WHO Air Quality Guidelines.

Particulate matter in Ireland is predominantly sourced from solid fuel burning and it is in this area where much of the reductions can be made. As the improvement in our economy continues we will also face challenges to comply with EU legislation for pollutants.

#### 3.6.3.2 Dust Deposition

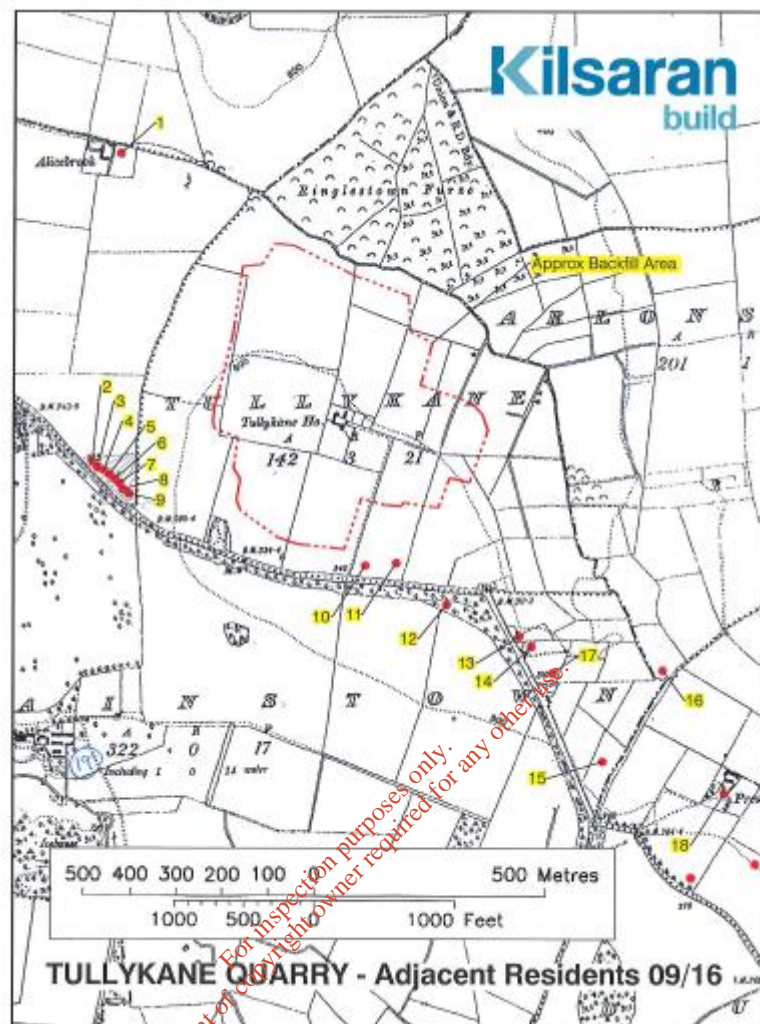
The impact of dust is usually monitored by measuring rates of dust deposition (DoE, 1995). There are currently no Irish statutory standards or EPA guidelines relating specifically to dust deposition thresholds for inert dust. There are a number of methods to measure dust deposition but only the German TA Luft Air Quality Standards specify a method of measuring dust deposition – The Bergerhoff Method (German Standard VDI 2119, 1972). On this basis, the DoEHLG(2004) recommended that the following TA Luft dust deposition limit value be adopted at site boundaries associated with quarry developments – total dust deposition (soluble and insoluble): 350 mg/m<sup>2</sup>/day (when averaged over a 30-day period).

#### 3.6.4 Existing Environment

##### 3.6.4.1 Background

The principle concern in respect of potential airborne dust emissions from the proposed development is the effect on residential amenity. Properties within the vicinity of the development are shown on Figure 3.6.6.

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**Fig 3.6.6 Nearest Residences to the proposed Development**

The materials to be recovered are principally “soils and stone” and inert construction and a small proportion of inert demolition waste for haul road construction. Any dust generated by the operation will comprise inert particulate matter.

Experience of reclamation workings indicates that mechanical activity is the most significant factor in material erosion and dust generation. Dust emanates from the placement of materials, the movement of vehicles on internal roads, loading and processing operations. However the effect of wind is also an important factor in dust generation and problems may arise at reclamation workings when both factors arise simultaneously. The impact of fugitive dust will be direct, temporary and non-cumulative and largely confined to the application site.

#### 3.4.4.2 Air Quality

The Environmental Protection Agency (EPA) manages the National Ambient Air Quality Network. For monitoring purposes, the country is divided into four air quality zones as follows: 'A' (Dublin); 'B'



(Cork); 'C' (Large Towns), and; 'D' (Rural). The Tullykane area falls into zone D. As stated previously (under the EU Directives, Ireland is required to monitor a number of air pollutants that have an impact on health and vegetation.

The EPA's Air Quality Index for Health (AQIH) is a scale from one to 10 that ranks air quality, and is applied to characterise the current air quality in each zone. A reading of 10 means the air quality is very poor and a reading of one to three inclusive means that the air quality is good. The current air quality index for the Rural East AQIH Region in which Tullykane is situated in is "2 - good" (Refer to Figure 3.6.7 below).

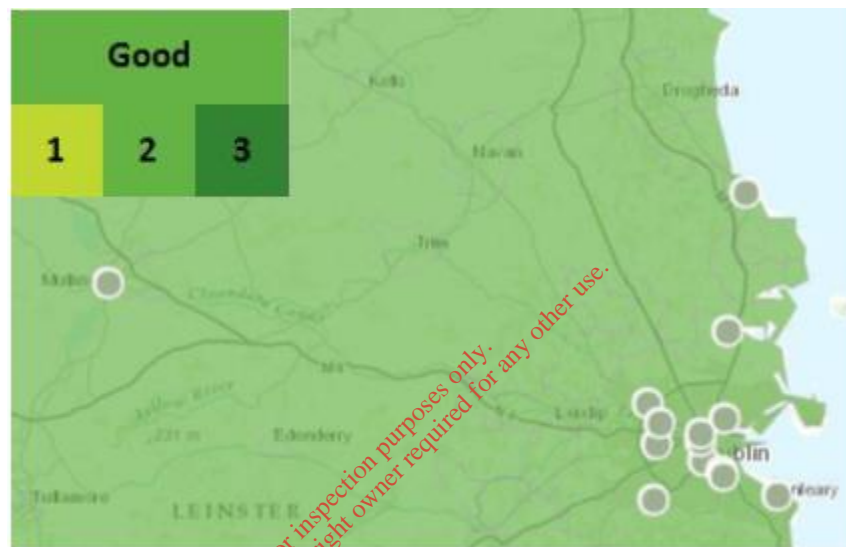


Fig 3.6.7 Rural East AQIH

The AQIH is based on measurements of five air pollutants, all of which can harm health. The five pollutants are:

- Ozone gas
- Nitrogen dioxide gas
- Sulphur dioxide gas
- PM2.5 particles and
- PM10 particles

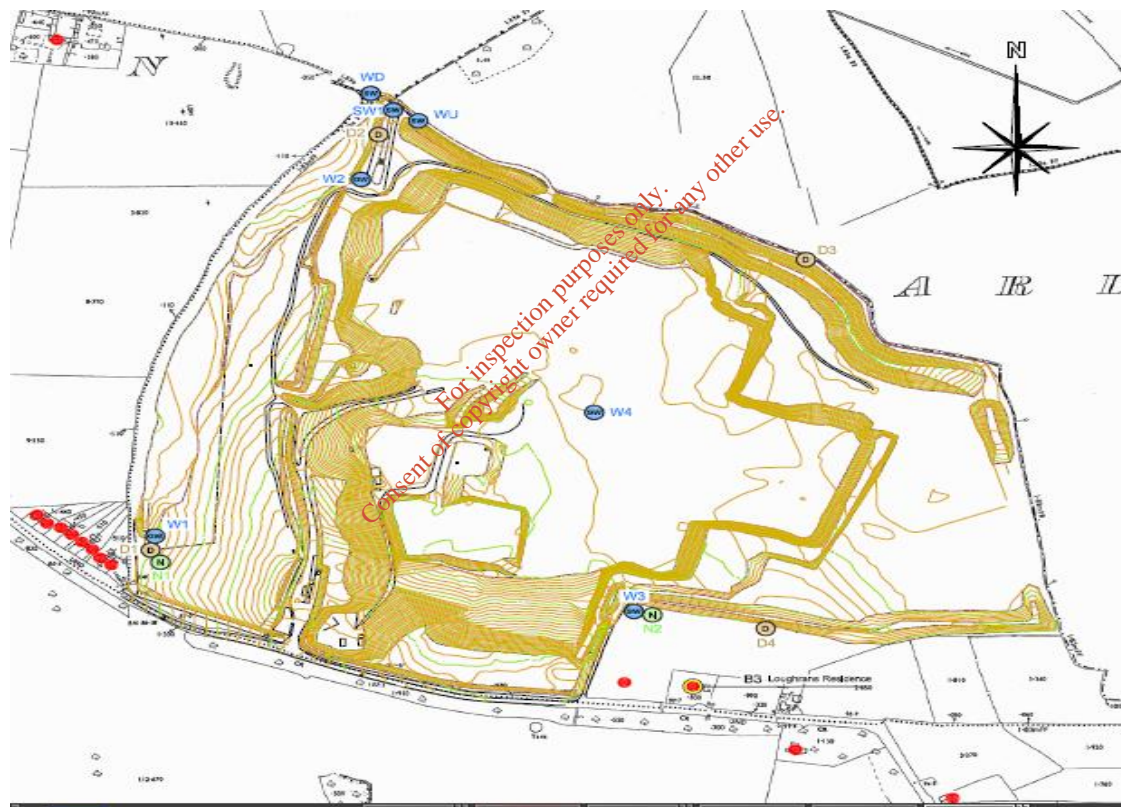
#### 3.6.4.3 Dust Monitoring

Dust deposition monitoring had been carried out in accordance with planning conditions stipulated for the site. In accordance with the regulations total dust deposition (soluble and insoluble) from the on-site operations associated with the development should not exceed 350mg/sq.m/day, averaged over a continuous period of 30 days. In order to comply with these regulations Kilsaran Concrete, the operator has set up a dust monitoring programme using Bergerhoff Dust Gauges. Four dust monitoring stations (D1, D2, D3 and D4) were established at the site boundary. (Ref Fig 3.6.8 Dust Monitoring Point locations).

The results of dust monitoring are provided in Table 3.6.1 below. Dust fall is measured using the Bergerhoff method as set out in German Standard VDI 2119. The normal recommended standard for dust emissions for this type of development is that “dust deposition shall not exceed 350 mg/m<sup>2</sup>/day measured at the site boundaries and averaged over 30 days”. This limit refers to total dust (using DIN method).

The above standard is also in accordance with guidance issued by both the Department of the Environment and the EPA in relation to dust deposition monitoring for these types of developments and will continue to be applied.

This programme will allow on-going monitoring of fugitive dust emissions from the site, thereby assisting in ensuring compliance with any future requirements or regulations.



**Fig3.6.8 Location of Dust Monitoring Locations**

**Table 3.6.1 Dust Monitoring Results:**

**KILMESSAN QUARRY**  
DUST MONITORING (BERGERHOFF STANDARD METHOD)

SAMPLE DATE	STN	RECORDING PERIOD	TOTAL DUST
05/01/2011	01	09/12/10 to 05/01/11	124.1
	02		246.4
	03		75.7
	04		107.7
03/02/2011	01	06/01/11 to 03/02/11	296
	02		167.1
	03		23
	04		72.6
03/03/2011	01	03/02/11 to 03/03/11	105.9
	02		211.9
	03		101.1
	04		28.5
01/04/2011	01	03/03/11 to 01/04/11	168.9
	02		22.8
	03		Broken
	04		122.7
03/05/2011	01	01/04/11 to 03/05/11	162.1
	02		104.9
	03		136.1
	04		Excessive Organics
02/06/2011	01	03/05/11 to 02/06/11	64.4
	02		42.4
	03		80.2
	04		37.3
01/07/2011	01	02/06/11 to 01/07/11	226.8
	02		171.8
	03		210.9
	04		50.8
29/07/2011	01	01/07/11 to 29/07/11	129.5
	02		77
	03		103.4
	04		133.4
26/08/2011	01	29/07/11 to 26/08/11	171.3
	02		168.9
	03		201.6
	04		245.2
23/09/2011	01	26/08/11 to 23/09/11	75.7
	02		67.2
	03		160.4
	04		131.9
25/10/2011	01	27/09/11 to 25/10/11	Excessive Organics
	02		233.7
	03		127.7
	04		148.9
22/11/2011	01	25/10/11 to 22/11/11	47.2
	02		196.7
	03		248.8
	04		222.8

The results show that the dust levels at the site boundary were always within the recognised TA Luft dust deposition limit value of *350 mg/m2 per day*. This infers that due to the fact that the activities on site were double the intensity incorporating truck movements in the order of double the proposed, Screening and crushing of aggregate and excavating and bulldozing it is unlikely that the air quality impact exerted by the facility will be greater than the previous impacts.

### 3.6.5 Assessment of Impacts

#### 3.6.5.1 Direct Impacts

Fugitive dust emissions are generated wherever there is movement of dust relative to the air. The emission of fugitive dust from inert soils and stone backfilling site activities is very dependent on

weather conditions. Where nuisance complaints from activities arise, they are generally as a result of a combination of specific site activities and particular weather conditions (e.g. dry, windy).

Within the application area, the following site activities may give rise to potential fugitive dust emissions:

- Internal movement of vehicles
- Tipping and levelling placed materials (bulldozing and excavating)
- Loading and Unloading of Vehicles

They are generally dispersed sources rather than specific point sources, and this dictates the measures required to mitigate potential dust related impacts.

The impact of fugitive dust will be direct, temporary and non-cumulative and largely confined to the application site.

The following flow diagram shows the sources of fugitive dust emissions arising on site and the methods of treatment/ abatement employed.

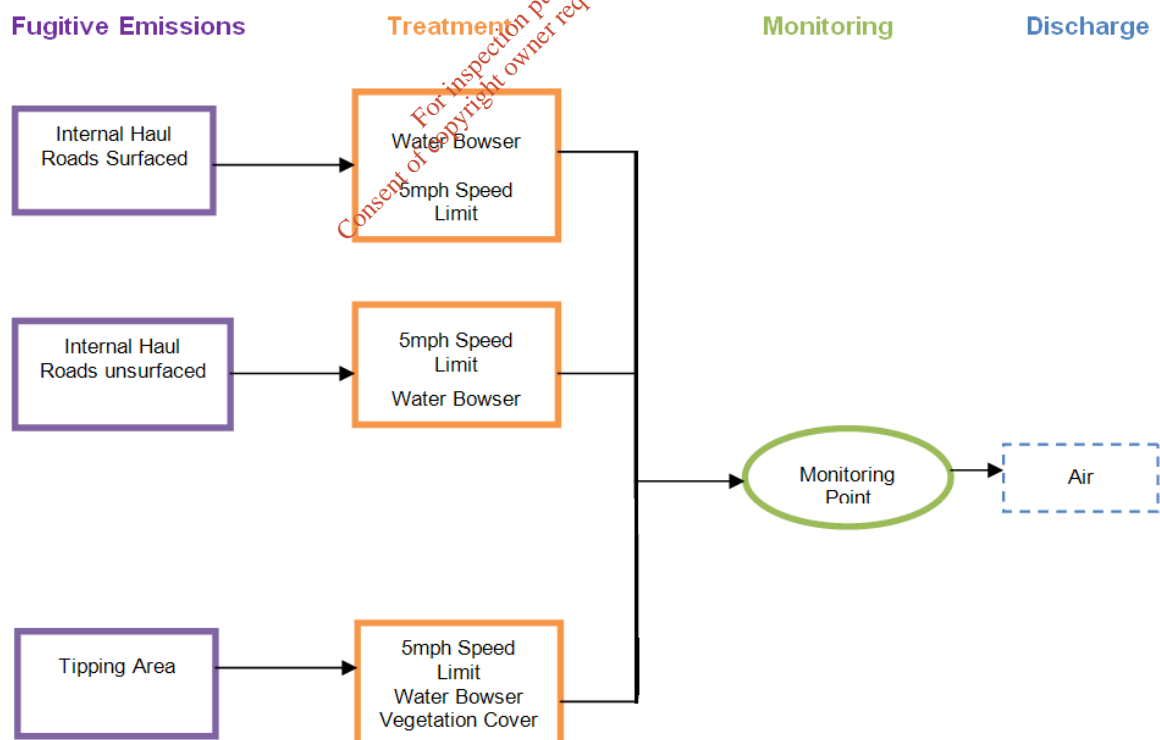


Fig 3.6.9 Operational Activities and potential impacts

The impacts of any dust deposition from the operations will be direct, of short duration, temporary and largely confined to the site area. Various mitigation measures have and will continue to be implemented to minimise any impacts as much as is practical.

The most recent dust monitoring results for the operation are given above (Operating year 2011) (Refer to Table 3.6.1 above). These results show that the dust levels at the site boundary are within the recognised TA Luft dust deposition limit value, and are considered typical of dust levels in the quarry area.

The proposed operation will have in place a number of mitigation measures to ensure the operation of the proposed development will not result in any significant impact on residences or local amenities. These measures will be approved and overseen by the Environmental Protection Agency who will issue the operating waste licence for the proposed facility.

The Air Quality Standards Regulations (2002 S.I. No. 271 of 2002) sets limit values for sulphur dioxide, nitrogen dioxide, particulate matter and lead in ambient air. The regulations apply to ambient air quality in the vicinity of land use/development types including quarries. The proposed development requires movement of materials by road, and transport by other methods is not practical in this situation. Given the proximity of the site to the National Road network fuel consumption and therefore exhaust emissions will be reduced relative to more removed locations. Given also the fact that the proposed development intends to reduce the permitted number of truck loads from 750,000 Tonnes per annum to 400,000 Tonnes per annum which represents an estimated 52% reduction in truck journeys, it is arguable that a case for compliance with best practice is being achieved.

The current air quality in the region is known to be “good” and thus the impact on air quality with respect to the proposed development is considered to be negligible.

#### 3.6.5.2 Indirect Impacts

Apart from the direct impact of the deposition of particulate material, there may be an associated visual impact with fugitive dust generation. This impact will be minimised by both the mitigation measures described to minimise dust in Section 3.6.6 below and those described to minimise visual impacts in Section 3.8.

#### 3.6.5.3 Interaction with other impacts

There are no interactions with other impacts associated with air quality issues.

#### 3.6.5.4 Cumulative Impact

It is proposed to import 400,000 tonnes of waste soil and stone (EWC Code 17 05 04) over a period of 14 years. This site is c. 2km to the South East of the facility at Tullykane. It is therefore considered

that the site is sufficiently removed from other activities so as there will be no significant cumulative impact with respect to the operation of the proposed development. Dust monitoring to date has shown that site activity at the existing facility are within accepted thresholds for this type of development.

### 3.6.6 Mitigation and Monitoring

#### 3.6.6.1 Mitigation

A number of measures have been adopted in the existing Environmental Management Programme for the site, to minimise dust emissions to the atmosphere from general site activity, internal haulage and tipping operations as follows:

- During dry weather the haul roads and stockpiles are sprayed with water to dampen any likely dust blows. A water bowser is maintained on site for this purpose.
- Consideration will be given to location of mobile plant so as to ensure that any principle dust sources cannot adversely affect sensitive off-site locations.
- Static and mobile wet dust suppression systems will be located at strategic points in the process if required.
- A wheel wash facility has been installed on site and all vehicles are required to pass through the wheel wash on exiting the site.
- All internal roadways will be adequately drained, to prevent ponding.
- The operator will engaged a contract road sweeper to ensure that the site entrance and adjoining public roadway is regularly cleaned. The sweeper will be readily available at short notice to sweep up any materials which may accidentally fall onto the public roadway.
- Suitable vegetation is to be provided on restored areas at the earliest opportunity.
- Ongoing dust monitoring to ensure threshold limits are not exceeded.

Dust emissions from the facility will be controlled and monitored. Dust emissions and their management will be addressed in the 'Environmental Management System' (EMS) for the Tullykane site.

It is considered given the nature of the activity, control and abatement measures and management of the existing quarry that emissions of pollutants (as defined in Waste Management Acts 1996 to 2003 and Air Pollution Acts 1992 and 1987 respectively) to the atmosphere are not likely to degrade the environment (i.e., be injurious to public health, or have a deleterious effect on flora or fauna or damage property, or impair or interfere with amenities or with the environment). The active working area of the site will be inspected frequently during dry, windy weather to assess the potential for dust blows, and when necessary, appropriate dust suppression and control measures



will be implemented in response. These measures are considered sufficient to ensure that dust emissions will remain below recognised thresholds for this type of development.

### 3.6.7 Residual Impacts

Given the low inherent potential for dust generation and dispersion from the proposed development, the rural location, and the mitigation measures incorporated in the design, it is anticipated that the effect on the existing air quality will be negligible, and no residual impacts are predicted.

### 3.6.8 References

1. Environmental Code 2nd Edition (2005), Irish Concrete Federation (ICF)
2. Environmental Management in the Extractive Industry, Environmental Protection Agency (EPA) 2006
3. Ireland's Environment 2012 - An Assessment, Environmental Protection Agency (EPA) 2012
4. Technical Instructions on Air Quality Control, TA Luft 1986
5. The Environmental Effects of Dust from Surface Mineral Workings – Volume 1 Summary Report and Best Practice Guides, Department of the Environment (DoE) 1995.
6. Quarries and Ancillary Activities Guidelines for Local Authorities 2004, Department of the Environment, Heritage and Local Government (DoEHLG) 2004

### Internet Sources

- A: <http://epa.ie> EPA
- B: <http://ec.europa.eu/environment/eia/eia-guidelines/g-screening-full-text.pdf> European Commission (2001) Guidance on EIA Screening
- D: <http://www.irishstatutebook.ie/home.html> Irish Statute Book, Office of the Attorney General

## 3.7 Noise

### 3.7.1 Introduction

This section of the EIS deals with the issue of noise associated with the proposed development incorporating the rehabilitation of the existing aggregate Quarry at Tullykane, Kilmessan, Co Meath and the establishment of a public amenity park on an area to the west of the proposed development.

The section will determine the existing environment with respect to noise by assessing the level of noise in the vicinity of the site, the potential impacts on the environment, and propose appropriate mitigation measures, if required, by the applicant to avoid, reduce or remedy any significant adverse impacts on the environment.

### 3.7.2 Study Methodology

The study methodology involved assessing the operational noise levels which pertained at the time of the quarry extraction phase prior to the pause in production. The study involved using noise monitoring results taken in 2012 when the plant was operational and assessing whether the proposed development would create additional, or less impacts and whether the background environmental situation had in any way changed since the last set of monitoring results. Predicted noise levels will be calculated for the new development versus the previous development for which planning permission exists for a period of 14 remaining years.

#### 3.7.2.1 Emission Limit Value

In accordance with the EPA (2012) Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NGS):

Typical Limit Values for Noise from Licensed Sites

Daytime (07:00 to 19:00hrs) – 55dB L<sub>Ar,T</sub>;  
Evening (19:00 to 23:00hrs) – 50dB L<sub>Ar,T</sub>;  
Night-time (23:00 to 07:00hrs) – 45dB L<sub>Aeq,T</sub>

Under the above guidelines quarrying is considered a specific activity. Detailed guidance in relation to noise and vibration associated with these activities is provided in the Agency publication Environmental Management in the Extractive Industry (Non-Scheduled Minerals) Environmental Management Guidelines (2006). Section 3.7 Noise, of this document sets out appropriate Emission Limit Values (ELV's) and deals with control of noise, vibration and air overpressure. i.e.

In relation to quarry developments and ancillary activities, it is recommended that noise from the activities on site shall not exceed the following noise ELVs at the nearest noise-sensitive receptor:

**Daytime:** 08:00–20:00 h L<sub>Aeq</sub> (1 h) = 55 dBA  
**Night-time:** 20:00–08:00 h L<sub>Aeq</sub> (1 h) = 45 dBA

It is therefore considered that the above EPA threshold should be applied for this development as this limit is a recognised standard within the industry and is a limit that is set by most of the Local Authorities. These levels are consistent with guidance issued by the Department of the Environment: “Quarries and Ancillary Activities – Guidelines for Planning Authorities (2004) DOEHLG”.

### 3.7.3 Existing Environment

The lands are being restored to agricultural use by importation and recovery of inert materials in accordance with a phased restoration scheme. Designated internal haul roads are used to direct site traffic to the current tipping area. A bulldozer is used to appropriately grade and compact the material to the desired profile as shown in previous sections of this EIS.

Currently, operations on the site have ceased and the site is closed. The site has been closed since 2012. Due to an uplift in the economic scenario around the country the site can now be reopened however as described previously it is Kilsaran’s contention that the site would be best served at this moment in time to the provision of a recovery facility for the disposal of inert soils and stones. This is an economic decision by Kilsaran Concrete and a full explanation for the context is given in the “Need for the Development” section of the EIS.

The principle concern in respect of potential noise emissions from the development is the effect on residential amenity. Properties within the vicinity of the development are shown on Figure 3.7.1. below.

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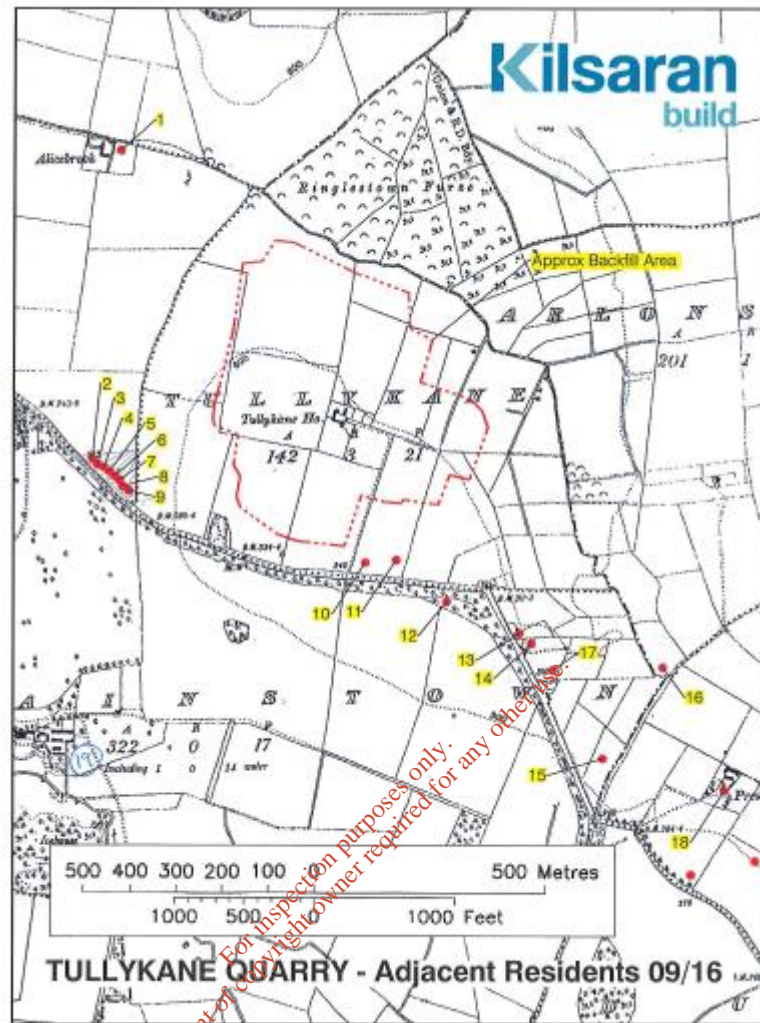


Fig 3.7.1 Location of Nearest Residences to the Tullykane Site

Noise monitoring to date has shown that site activity at the existing facility are within accepted thresholds for this type of development.

### 3.7.3.1 Noise Monitoring Locations

Noise monitoring was carried out regularly at the facility but ceased with the cessation of operations at the facility in 2012. The noise monitoring locations were assigned by identifying the most critical noise sensitive receptors proximate to the facility. Fig 3.7.2 below shows the location of the noise sensitive receptors deemed most sensitive at the time of establishment of the Environmental Monitoring programme.



**Table 3.7.1 Representative Noise Sensitive Receptors (NSRs)**

<b>ID</b>	<b>Address</b>	<b>Easting</b>	<b>Northing</b>
N1	LOCATED AT THE SOUTH WEST OF THE SITE ADJACENT TO THE NEAREST OF THE SWAINESTOWN COTTAGES	289831	257004
N 2	LOACED AT THE SOUTHERN CENTRAL BOUNDARY OF THE SITE PROXIMATE TO 2 RESIDENCES ONE NAMED LOUGHRAN RESIDENCE	290306	256946

### 3.7.3.2 Noise Monitoring results

Results were taken from the last set of noise analysis. These results have been taken to be a true representation of the actual operational noise levels when the facility was last in production. The core operational activities at this time were: Truck / vehicular movement, crushing, screening, excavator operation, loading shovel operation and bulldozing.

Monitoring Date	Location	Duration (hr:mins)	L <sub>Aeq</sub> (dBA)	L <sub>10</sub>	L <sub>90</sub>	Wind Speed	Wind Direction
10/01/2012	N1	00:15	45.5	49.3	33.5	0.9	Non-direct
	N1	00:15	43.5	46.6	33.6	0.7	Non-direct
	N1	00:15	44.1	40.1	34.3	0.6	WSW
	N1	00:15	43.7	38.9	33.9	0.7	SW
	N2	00:15	47.0	47.1	38.5	0.3	W
09/02/2012	N1	00:15	45.7	46.1	42.1	0.9	SW
	N2	00:15	41.7	42.5	28.8	0.3	SSW
08/03/2012	N1	00:15	44.6	46.7	38.0	1.6	SW
	N2	00:15	48.2	41.1	38.1	1.9	S
16/04/2012	N1	00:15	45.6	46.0	35.5	0.3	WSW
	N2	00:15	43.5	40.6	34.8	0.3	SW

**Table 3.7.2 Noise monitoring Results**

For all dates monitored at that time, noise monitoring results for the facility were deemed to be in full compliance with the required legislative and planning permission stipulations.

It is considered that the noise monitoring results from 2012 could be regarded as a worst case scenario with both quarry operations including restoration activities ongoing at the time. The current proposal for the backfilling quarry restoration operations are at a much lower intensity with less operational plant and equipment and less proposed vehicular movements.

### 3.7.4 Assessment of Impacts

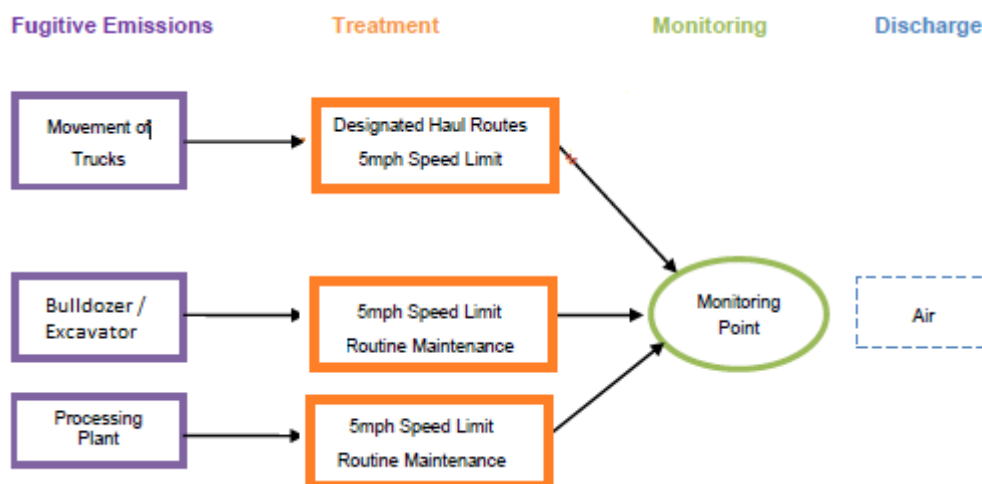
The main source of noise and vibration on site is from:

- Movement of trucks on internal haul roads and tipping of material
- Bulldozer placing and grading the infill material
- Processing Plant

Given the nature of the development the location of the above will vary dependent on area of site being restored.

The following flow diagram shows the main sources of noise emissions that will arise on site and the methods of treatment/abatement to be employed.





**Fig 3.7.3 Noise emission sources and treatment and mitigation measures**

Environmental noise monitoring has been carried out at this location in compliance with the terms of the planning permission pertaining to the site. Noise monitoring to date has shown that noise levels due to site activity are within acceptable thresholds for this type of development. Given that site activity will in general be further removed from the nearest noise sensitive locations the overall impact with respect to noise will be further reduced with respect to the continuance of operations.

#### 3.7.4.2 Indirect Impacts

The main background noise sources in the area are from the adjoining local Road. No other significant industrial sources exert any noise impact on the local area. The village of Kilmessan and its operational traffic is the nearest other significant noise source.

It is proposed to import 400,000 tonnes of waste soil and stone (EWC Code 17 05 04) over a period of 14 years. This site is c. 1km to the South East of the facility at Tullykane. It is therefore considered that the site is sufficiently removed from other activities so as there will be no significant cumulative impact with respect to the operation of the proposed development. Noise monitoring to date has shown that site activity at the existing facility are within accepted thresholds for this type of development (Refer to Section 3.7.3.1 above).

The restoration works using imported “soil and stone” are no different from normal quarry restoration operations. As such there is no cumulative impact with respect to the movement and placement of materials during the progressive restoration of the quarry development. The proposed development will also be operated within acceptable standards for this type of development and emission limit values will be set by the proposed EPA waste licence for the facility.

#### 3.7.4.3 Interaction with other Impacts

There are no interactions with other impacts at the site. As regards disturbance, few if any animals are sensitive to noise from this sort of operation. Furthermore, as this is an established operation all species local to the site have had time to adjust. The restart of operations may cause some minor disruption again for animals but it will be minimal.

### 3.7.5 Mitigation and Monitoring Measures

#### 3.7.5.1 Mitigation

Noise resulting from the operations can be kept to acceptable levels by the implementation of good design, effective operation and management and by the adoption of 'best practices'. Reducing noise at source wherever possible is the most effective way of minimising the impact but barriers and screens between noise source and receptor can also be used to very good effect.

The type of mitigation techniques implemented to reduce noise are detailed below:

- The provision of temporary peripheral screen banks to screen site activities from outside views.
- General site activity will be within the existing pit and below the level of the nearest residences.
- The use of designated haul roads to ensure that site traffic is removed from nearest noise sensitive receptors.
- Regular maintenance of all plant and machinery is an integral part of site management and is important in helping to minimise noise impact.
- All plant and equipment will conform to noise emission limits set out in Statutory Instrument No. 320 of 1998 European Communities Construction Plant and Equipment- Permissible Noise Levels (Regulations, 1998) and amendment set out in Statutory Instrument No. 359 of 1996.

##### 3.7.5.1.1 Screening

For maximum benefit, acoustic screens should be close either to the source of noise (as with stationary plant) or to the listener.

Careful positioning of noise barriers, such as bunds or noise screens, can bring about significant reductions in noise levels,

The topography of the site lends itself to providing a barrier between the center of activity and noise sensitive receptors.

The quarry floor is surrounded by high embankments (see attached photos below) and surrounded by earthen berms. These provide natural barriers and result in reduced noise levels in the order of up to 10 decibels.

##### 3.7.5.1.2 Noise Reduction at Source

The movement of plant onto and around the site should have regard to the normal operating hours of the site and the location of any NSRs as far as is reasonably practicable.

The use of conventional audible reversing alarms may cause problems and alternatives are available.

Audible reversing warning systems on mobile plant and vehicles should be of a type which, whilst ensuring that they give proper warning, have a minimum noise impact on persons outside sites.

#### 3.7.5.1.3 Maintenance

Regular and effective maintenance by trained personnel is essential and will do much to reduce noise from plant and machinery.

- Noise caused by vibrating machinery having rotating parts can be reduced by attention to proper balancing.
- Noises caused by friction in machines can be reduced by proper lubrication.

#### 3.7.5.1.4 Training

Workers should be trained to employ appropriate techniques to keep site noise to a minimum, and should be effectively supervised to ensure that best working practice in respect of noise reduction is followed.

Good practice includes:

- the proper use and maintenance of tools and equipment;
- the positioning of machinery on site to reduce the emission of noise to the neighbourhood and to site personnel
- the avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment
- avoid unnecessary revving of engines and switch off equipment when not required;

#### 3.7.5.2 Monitoring

The operator has established an environmental monitoring programme to include noise monitoring. It is proposed to continue to carryout noise monitoring at the two locations (N1 to N2) which includes the nearest noise sensitive locations (Refer to Figure 3.7.2). It is proposed to carryout noise monitoring on a bi-annual basis or in accordance with the stipulations of the EPA waste licence conditions.

The results of monitoring to date shows that the development can comply with the noise level threshold as specified and as a consequence the development will have no significant effects regards noise levels in the area. Noise emissions and their management will be addressed in the 'Environmental Management System' (EMS) for the Tullykane site.

This programme will allow on-going monitoring of noise emissions from the site, thereby assisting in ensuring compliance with any future requirements or regulations. Through implementation of the proposed mitigation measures it is considered the development will continue to have no significant effects with regard to noise levels on the local residences, their property, livestock and amenity.

#### 3.7.6 Residual Impact

Through implementation of these mitigation measures it is considered the development will have no significant residual impacts with regard to noise levels on the local residences, their property,

livestock and amenity. Based on the impact assessment and existing mitigation measures in place, no additional remediation measures are considered necessary with respect to noise.

#### 3.7.7 Recommendations

- The planning authority should attach noise conditions to the permission to ensure that the facility 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.

#### 3.7.8 Conclusions

- 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 the current expectations for the current Planning Permission.
- 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.

#### 3.7.9 References

- (1) Noise Control on Construction and Open Sites - Part 1. Code of Practice for Basic Information and Procedures for Noise Control)
- (2) BS 5228: Part 1: 2009, Noise and Vibration Control on Construction and Open Sites
- (3) ISO 1996/1 Acoustics – Description and Measurement of environmental noise- Part 1: Basic quantities and procedures
- (4) ISO 1996-2: Acoustics – Description and Measurement of environmental noise Part 2: Acquisition of data pertinent to land use
- (5) ISO 1996-3: Acoustics- Description and Measurement of environmental noise Part 3: Application to noise limits
- (6) Calculation of Road Traffic Noise, Department of Welsh Office, 1988 HMSO
- (7) EPA guidance Note NG4
- (8) The National Roads Authority (NRA), Guidelines for the Treatment of Noise and Vibration in National Roads Schemes (2004)
- (9) BS 5228: Noise Control on Construction and Open Sites Part 1: Code of Practice for Basic Information and Procedures for Noise Control (2009)

## 3.8 Landscape and Visual Assessment

### 3.8.1 Introduction

This section assesses the landscape & visual impacts arising from the proposed restoration, back fill and the provision of a community amenity park a Quarry at Tullykane, Kilmessan, Co. Meath including assessment of the following:

Landscape Impacts, including: direct impacts upon specific landscape elements within and adjacent to the site; effects on the overall pattern of the landscape elements which give rise to the landscape character of the site and its surroundings; and impacts upon any special interests in and around the site.

Visual Impacts: direct impacts of the development upon views in the landscape; and overall impact on visual amenity.

The site is located entirely within the townland of Tullykane, Kilmessan, Co. Meath, approximately 1km south-east of Kilmessan, Co. Meath on the Kilmessan to Dunsany road L2206.

Tullykane Quarry is a long established development with history of quarrying on the site going back over 100 years. A number of existing quarries are located within the areas designated as exceptional under the Meath Development Plan 2007-2013 for example Mullaghcrone Quarry and Donore Shale Quarry.

The CDP gives a list of Views and Prospects to be Protected (Table 27, page 355), Tullykane is mentioned in View VP 24 along with the following townlands:-

Kilmessan, Swainstown, Dunsany, Killeen, Warrenstown, Clowanstown and Leshemstown. These townlands are all located along the Skane River Valley from Kilmessan to Drumree/Dunshaughlin with the exception of Tullykane, which is located north of Swainstown. However the County Road L2206 traverses the entire length of the view or prospect to be protected and does run through the southern part of Tullykane.

The views of the quarry from the L2206 are limited to the southern landscaped and planted screening mounds, including a cut lawn and the stone clad entrance walls. The appearance of the quarry boundary along this section of road does not detract from the landscape quality of the passer by.

The application site existing quarry is located largely in an agricultural area. There are a number of 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.

**Landscape effects assessment:** deals with changes to landscape as a resource. Society as a whole has an interest in this and it is recognised as one of the key dimensions of environmental interest, alongside matters such as biodiversity, or cultural heritage. It is concerned with issues like protected landscapes, the contribution of landscape character to sense of place and quality of life for all, and the way that change may affect individual components of the landscape;

**Visual effects assessment:** is concerned with how the surroundings of individuals or groups of people may be specifically affected by change in the landscape. This means assessing changes in specific views and in the general visual amenity experienced by particular people in particular places.

### 3.8.2 Scope of Work

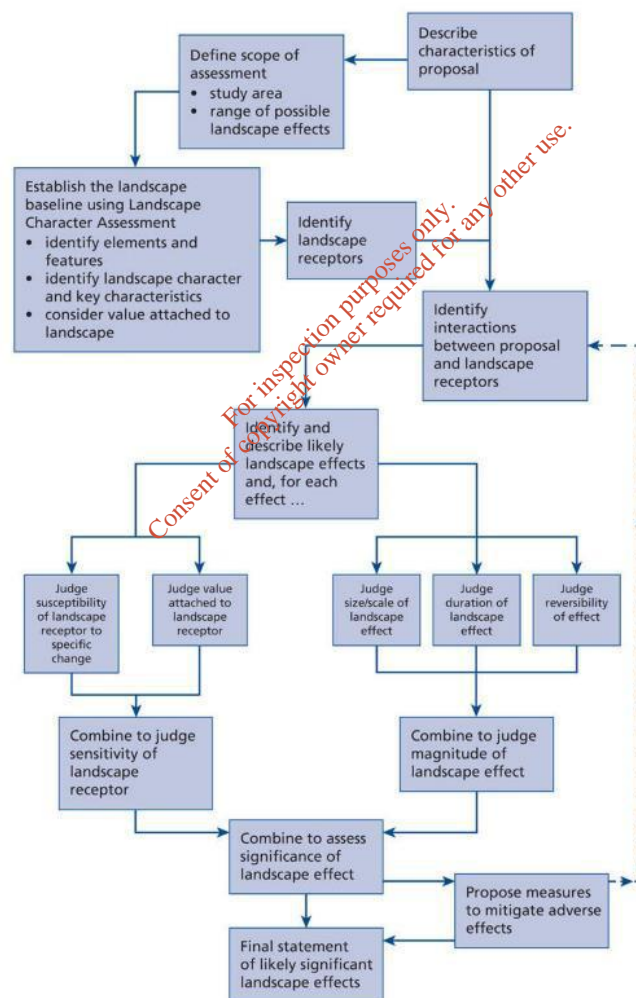
The landscape and visual impact assessment was carried out in accordance with the Guidelines for Landscape and Visual Impact Assessment Third Edition 2013 (GLVIA3). The key components of which are:

Introduction – brief description of the development, relevant planning context

Receiving Environment – description of the landscape & visual baseline

Impact Assessment – description of the proposed development in relation to landscape and visual effects

Mitigation Measures – description of the measures which will be incorporated to mitigate any landscape and visual effects of the development.





### 3.8.3 Planning Policy

Meath County Council Development plan 2013-2019 is the statutory plan detailing the development objectives/policies relating to the proposed development. The relevant policies objectives are outlined below;

#### Landscape Impacts

In terms of location, Chapter 14 of this Plan in relation to landscape, identifies protected views, scenic routes and amenity areas in the county. In the assessment of planning applications related to the extractive industry, including restoration / rehabilitation of existing pits, the planning authority will have regard to the policies / objectives for the specific landscape character of the area within which the application site is located.

#### Archaeological Assessment

The Archaeological Code of Practice (Code of Practice between the Department of the Environment, Heritage and Local Government and the Irish Concrete Federation, June 2009) shall be among the guidelines used in the archaeological assessment of all extractive development applications, with best practice adopted in all cases.

#### Extractive Industry Policy

It is the policy of the  
Council:

*“To ensure that all existing workings are rehabilitated to suitable land uses and that extraction activities allow for future rehabilitation and proper land use management.”*

#### Policies:

- EI3. Future authorisations by the local authorities, the EPA and An Bord Pleanála must take account of the scale and availability of existing back filling capacity.
- EI4. The local authorities will co-ordinate the future authorisations of backfilling sites in the region to ensure balanced development serves local and regional needs with a preference for large restoration sites ahead of smaller scale sites with shorter life spans. All proposed sites for backfilling activities must comply with environmental protection criteria set out in the plan.

In the face of increased demand for backfilling authorisations there is a need for better coordination between local authorities in the region. This is to ensure facilities are planned and developed at suitable sites and do not present a risk to European designated sites and existing biodiversity and habitats. It is recommended that the lead authority liaise with relevant stakeholders (including the EPA and the DAHG) to ensure appropriate measures are in place for the control and spread of invasive alien species at backfilling sites in the region where necessary.

### 3.8.1.3.1 Meath County Development Plan 2013-2019

Under the Meath County Development Plan (CDP), the County has been divided into 4 Landscape Character Types (LCT) – River Corridors & Estuaries; Lowland Landscapes; Hills & Upland Areas and Coastal Landscapes.

The County is further subdivided into 20 Landscape Character Areas (LCA), see Figure 11.1. The demarcation on the CDP maps places the application site between the LCT Lowland Landscapes and Hills & Upland Areas, namely Lowlands (LCA6) and Tara Skryne Hills (LCA12).

The landscape characteristics for the lands adjoining the application is derived from the topography, agricultural land use and archaeological heritage.

#### 3.8.1.3.1.1 LCA6 Central Lowlands

The Central lowlands is described as composed of rolling drumlins interspaced with numerous large estates and associated parklands. Views within this are generally limited by the complex topography.

The Central Lowlands have the following values

- Landscape Value of : High
- Landscape Sensitivity: Medium
- Landscape Importance: Regional

#### 3.8.1.3.1.2 LCA12 Tara Skryne Hills

The landscape is comprised of broad rolling hills separated by a mixture of well managed small and large fields which are enclosed by thick thorn hedgerows and mature trees (ash, beech and oak). The Hill of Tara is an area of raised upland to the south of Navan. This is immediately adjacent to the Existing N3 and M3.

The Tara Skryne Hills have the following values

- Landscape value of : Exceptional
- Landscape sensitivity : High
- Landscape Importance : National/International

### 3.8.2 Receiving Environment

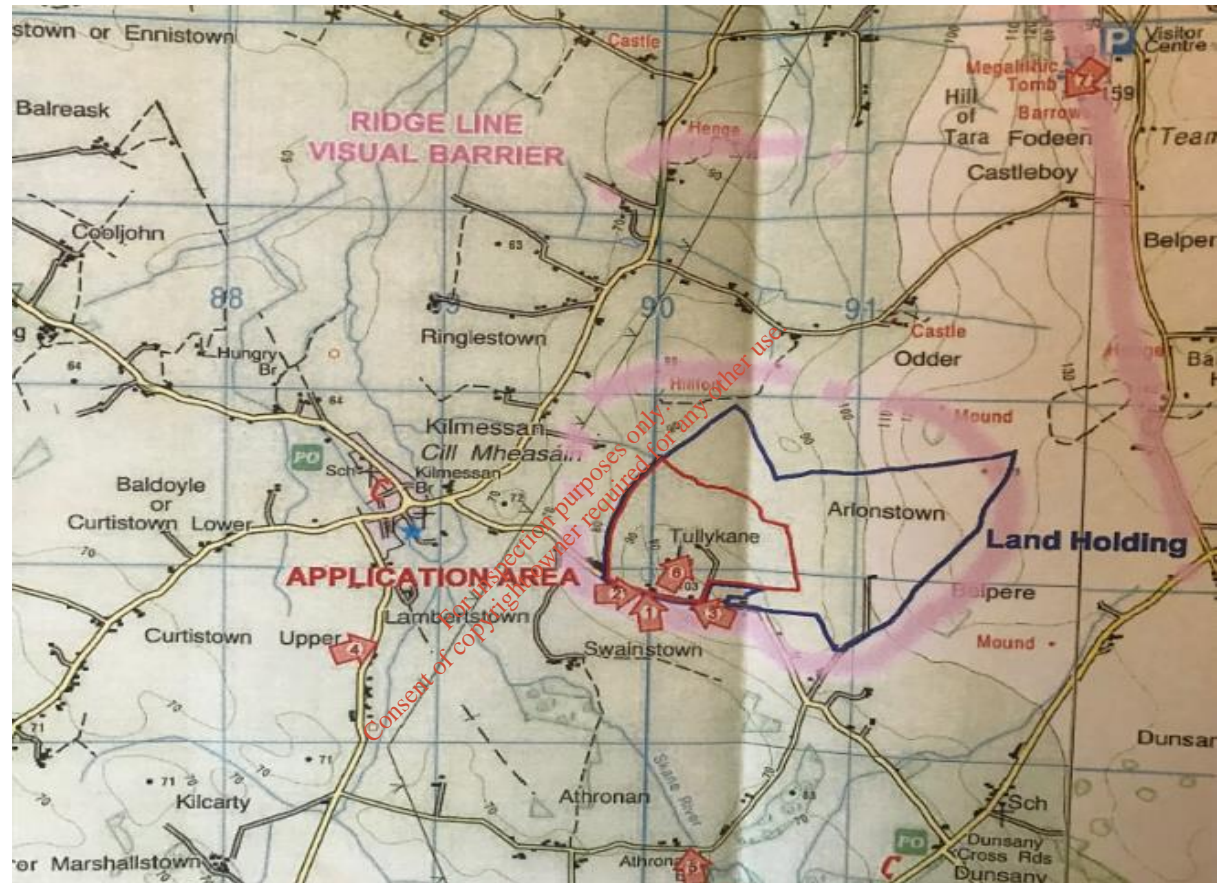
#### 3.8.2.1 Baseline Study Methodology

The aim of the visual baseline is to 'establish the area in which the development may be visible, the different groups of people who may experience views of the development, the places where they will be affected and the nature of the views and visual amenity at those points' (GLVIA 3rd Edition, P32 Paragraph 3.15). Also, where possible the approximate or relative number of different groups of people who will be affected.

Refer to Photographs (Plates) 1- 12 Shows various views from the road boundary and from the quarry and View Points as shown on the View Point map Attached

*‘Two-dimensional photographic images and photomontages alone cannot capture or reflect the complexity underlying the visual experience, and should therefore be considered an approximation of the three-dimensional visual experiences that an observer would receive in the field’.*

Figure 2.0 below is a map representing the specific photograph locations which have been deemed specifically to be of interest in terms of whether the site is visible from specific areas surrounding the site:



The key location points are listed in table 1.0 below:

Location	Location Description	Plate No.
1	Splayed entrance to Quarry	2
2	Entrance view westwards towards Kilmessan Village	4
3	View from Entrance Eastwards towards Dunsany	3
4	Visual representation of site as seen from Lambertstown	5
5	View of Site from Athronan Bridge Dunsany	6
6	View towards Hill of Tara from Elevated position at site	
7	View from Hill of Tara towards Site at Tullykane	

**Table 1.0: Key location points**





Plate 1 - Overhead view of the existing Quarry (Google Maps 2016)



Plate 2 – Location 1 Splayed entrance to Quarry



**Plate 3: Location No 3 View from Entrance Eastwards towards Dunsany**



**Plate 4: Location No 2 View From Entrance westwards towards Kilmessan Village**





Plate No. 5: Location No. 4 Visual representation of site as seen from Lambertstown



Plate No. 6: Location No. 5 View of Site from Athronan Bridge Dunsany





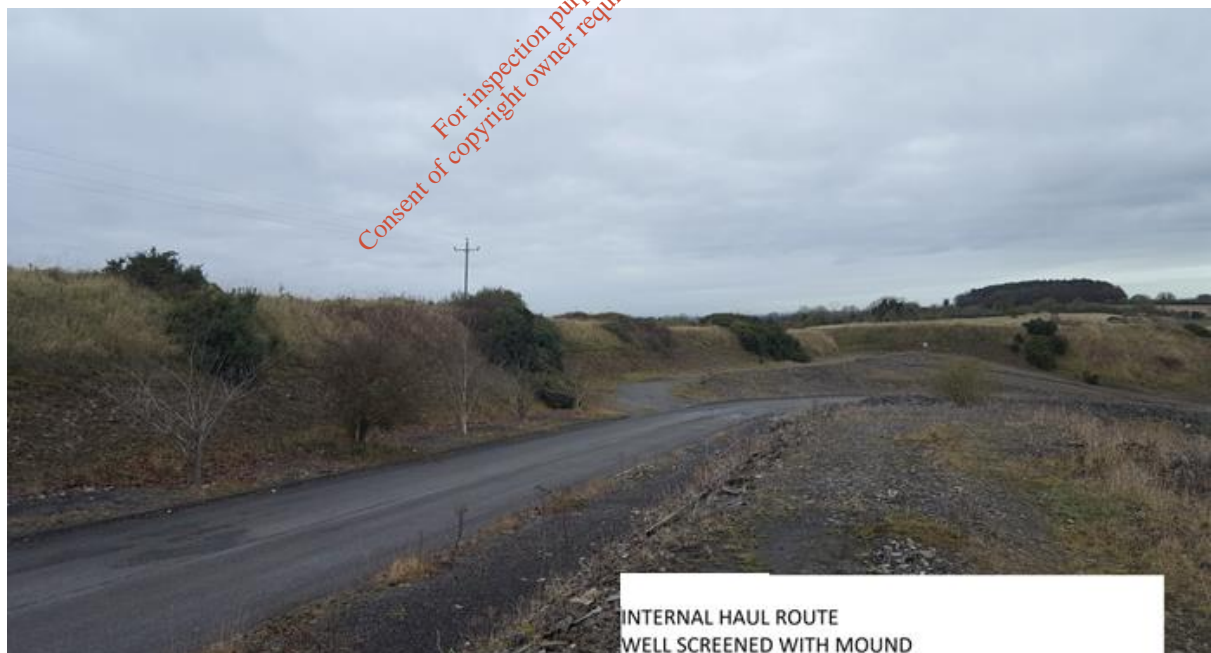
Plate No 7: Location No 6 View towards Hill of Tara from Elevated position at site



Plate No 8: Location No 7 View from Hill of Tara towards Site at Tullykane



**Plate No.9: View inside site looking Southwards towards existing Entrance and Public Road L2206**



**Plate No 10: Internal Haul Route with visible screening mounds**



Plate No 11: View inside quarry looking eastwards to Dunsany.



Plate No 12: View of existing Quarry Operations



#### 3.8.2.1.1 Study Area

A study area site between the LCT Lowland Landscapes and Hills & Upland Areas, namely the Central Lowlands (LCA6) and Tara Skryne Hills (LCA12) was taken for the Landscape & Visual assessment section of the Landscape Character Areas (LCA), in the Meath CDP.

#### 3.8.2.1.2 Sources of Information

- Meath County Development Plan 2013 – 2019
- Ordnance Survey Mapping
- Topographical Survey
- Site and Field Inspection

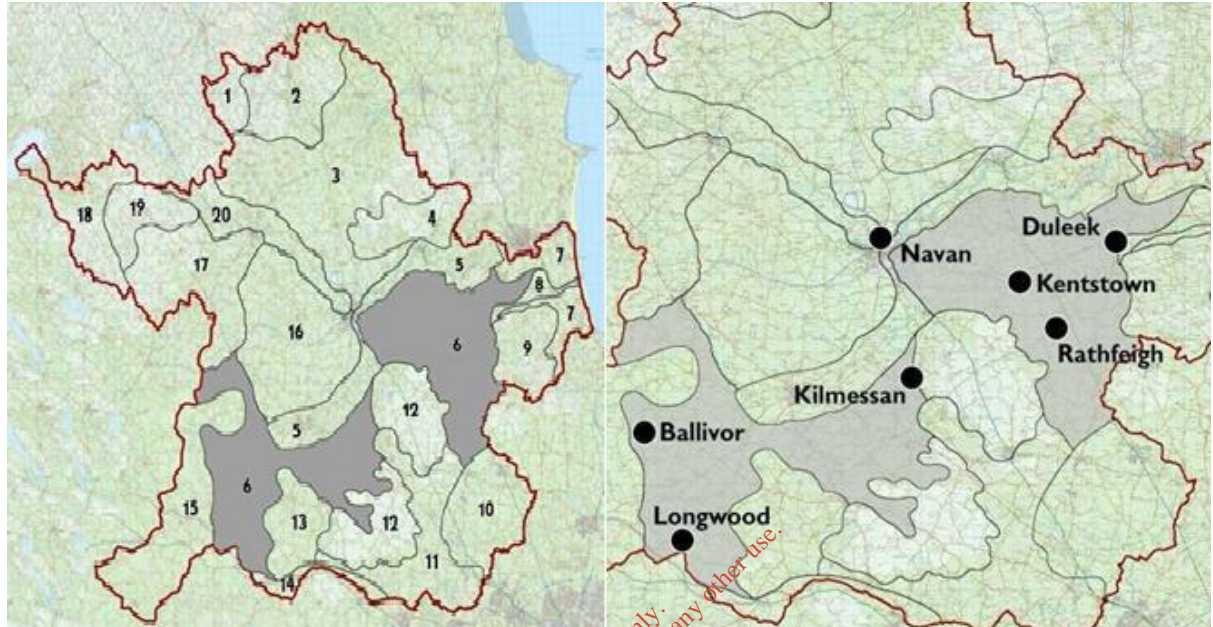
#### 3.8.2.1.3 Field Monitoring and Inspection

A detailed site survey was undertaken on August 2016 & December 2016. The visibility assessment was recorded from public road at the same time.



### 3.8.2.2 Landscape Baseline

#### 3.8.2.2.1 LCA6 Central Lowlands



Landscape designations for this area have been detailed as follows:

*Landscape Value:* **High**  
*Landscape Sensitivity:* **Medium**  
*Landscape Importance:* **Regional**

#### 3.8.2.2.1.1 Landscape Description

Large lowland landscape area composed of rolling drumlins interspersed with numerous large estates and associated parkland. Thick wooded hedgerows, with some conifer plantations, and shelterbelts of ash and larch, separate medium to large fields. Deep roadside drainage ditches and banked hedgerows are a common feature of the landscape in the enclosed rural road corridors. The main transport routes are those radiating from Trim including the R154 to Athboy – Dunboyne, R156 Ballivor- Dunboyne and the R160 to Longwood.

This area of western lowland is less populated and the built fabric consists of scattered dwellings, with concentrations of residential dwellings present adjacent to arterial routes within the vicinity of larger villages such as Longwood and Ballivor, which have expanded significantly and inappropriately due to development pressure.

The landscape character around settlements tends to be a well-managed patchwork of small pastoral fields, dense hedgerows and small areas of broadleaved woodland particularly in the Kildalkey environs where there are estate landscapes with large mature parkland trees. The landscape is predominantly rolling pastureland, although the landscape surrounding

Castlerickard has greater diversity than elsewhere in the lowlands with estate landscape, large conifer plantations, and birch woodland around the Boyne river corridor.

In more remote areas, away from settlements, single-track roads wind through less well-managed farmland with rough pasture, overgrown hedgerows and less woodland. Farmland is a variety of scales with square— rectangular fields divided by hedgerows, which are usually clipped to eye-level adjacent to road corridors but are less well managed away from roads. The agricultural landscape comprises a series of small farms rather than few large ones.

Views within this area are generally limited by the complex topography and mature vegetation except at the tops of drumlins where panoramic views are available particularly of the Hill of Tara uplands and Skryne Church. Donore village is critical to the setting of Bru na Boinne World Heritage Site and as such any development in Donore would need to be considered carefully. There is a small cement works outside Kildalkey but the rolling topography limits its visual impact. Short-range views are channelled along narrow valleys between drumlins and often along road or river corridors.

#### 3.8.2.2.1.2 Key Landscape Characteristics

##### 3.8.2.2.1.2.1 Geology and Soils

Complex drumlin landform created by glacial movement. The central lowlands have a diverse geological make up with the north east comprising of shaly limestone and sandstone and micaceous and pebbly sandstone. The rest of the lowlands formed from calp limestone.

In the north east of the central lowlands deep and shallow well-drained soils have been developed for agriculture with estate landscapes more prevalent. In the south west a mixture of well drained soils and peaty soil have created a more diverse landscape with areas of fertile agricultural land interspersed with conifer plantations and birch woodland.

Ground conditions suit those trees that thrive in free draining soil such as beech, oak, ash and lime with wetter species such as alder, birch, and willow present adjacent to the Royal Canal.

##### 3.8.2.2.1.2.2 Land use

Mix of small - medium rough pasture fields.

Beech stands and rows of beech and pine.

Sand & gravel quarries southwest of Hill of Down and near Kilmessan.

##### 3.8.2.2.1.2.3 Ecology and Habitat

#### 3 proposed National Heritage Areas (PNHA's)

- Duleek Commons – Is a level drained marsh northwest of Duleek.
- Thomastown Bog—3km west of Duleek this raised bog surrounded by wet woodland and grassland.
- Balrath Woods – Narrow strips of woodland adjacent to N2 and L125.
- Cromwells Bush Fen – Former Area of Scientific Interest (ASI)
- Painstown Quarry - Former Area of Scientific Interest (ASI)
- Cruicerath Quarry - Former Area of Scientific Interest (ASI)



- Strong network of well-wooded hedgerows in most parts.
- Range of mature broadleaf copses and rows of pines. Some wetland habitat and wet pasture adjacent to Royal Canal.
- Boyne River Corridor and Stoneyford River are important due to the variety of habitats associated with the rivers.

#### 3.8.2.2.1.2.4 History and Culture

- Long established mixed scale farmland.
- Royal Canal
- Estate landscapes.
- Buried archaeology but few upstanding historical features.
- Duleek has an historic core with several buildings and artefacts.

#### 3.8.2.2.1.2.5 Tourism

- Royal Canal is a popular recreational boating route from Dublin to Mullingar.
- Designated walks which branch off the existing Royal Canal Way and provide links to other tourist attractions/heritage towns would be a valuable addition.
- Summerville Demesne at Kentstown has some tourist facilities and potential to develop further attractions.

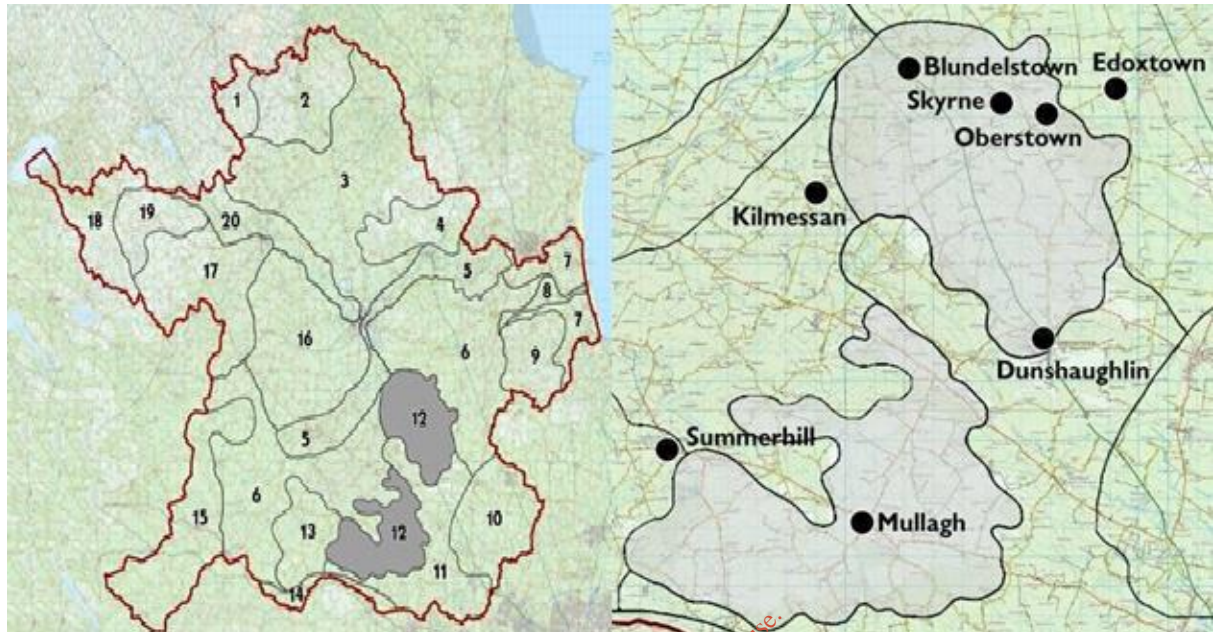
#### 3.8.2.2.1.2.6 Settlements and Built Structures

- Longwood is the main settlement. Settlement type predominantly small villages with several medium to large villages.
- Settlements have most vernacular buildings. Built development in countryside consists of individual dwellings, generally modern rather than traditional buildings with concentrations of modern built development adjacent to Clonard.

#### 3.8.2.2.1.2.7 Description of key settlements

- Longwood: Large village with small-scale attractive centre, although through traffic is considerable. No new development in centre but large housing developments on the outskirts.
- Duleek: Small town with attractive village green. Mix of new development on the urban fringe is unsympathetic to the attractive location.
- Kildalkey: Small village that has developed significantly in recent years. No real hub to the village, however surrounding landscape is attractive.
- Castlerikard: Small attractive village with castle ruins and church overlooking river. Relatively un-spoilt in terms of built environment.

### 3.8.2.2.2 LCA 12 Tara / Skryne Hills



#### 3.8.2.2.2.1 Landscape Description

The Hill of Tara is an area of raised upland to the south of Navan. It is immediately adjacent to the N3 national primary route, which links Navan to Dunshaughlin to the east of the Hill of Tara. The landscape comprises broad rolling hills, separated by a mixture of well-managed small and large fields, which are enclosed by thick thorn hedgerows and mature trees (ash, beech and oak.)

The upland aspect of the Hill of Tara provides panoramic views over the landscape, where the wealth of heritage within this part of Meath can be clearly seen. Skyrne Church is a prominent landmark to the east. There are also a large number of raths located throughout the rolling drumlin landscape. The upland landscape is open in the character but the lowlands are well-wooded and enclosed. This is particularly the case for rural road corridors and the existing N3 road, which has minimal visual impact on the Hill of Tara.

Overall this LCA is well managed and has high scenic value, although it is in poorer condition in the Kilmessan environs and to the north of Dunshaughlin.

Kilmessan is a large heritage village to the north east of the Hill of Tara within close proximity of the N3. The built fabric of the village is disjointed in both style and scale: both new residential and office units have been developed rapidly in recent years and are at odds with the scale and architectural character of the village. Pressure for further development will be significant, due to the towns' proximity to the N3 and proposed M3. Therefore it is vital that careful consideration is given to all future development to avoid expansion of the village in an unsympathetic manner.

Dunshaughlin is a large town located to the south of the Hill of Tara. The N3 national primary route runs through the town and continuing pressure from the Dublin metropolitan area has

led to Dunshaughlin developing as a commuter town. The main street of Dunshaughlin has few buildings of merit considering the size of the town and much of the built environment has developed over the last 30 years. There are many large housing developments on the edge of town. Some have been successfully integrated into the fabric of the town, although in general the scale and style has created a monotony of residential developments.

Land use is predominantly pasture with small concentrations of arable land in both the uplands and lowlands. There are some small copses within the area but commercial forestry is not present. The rich archaeological heritage of this area, has to some extent constrained development apart from the recent updating of transport infrastructure.

The proposed M3 motorway is the singular most important transport infrastructure development to be built in Meath in recent years and it will dramatically change the volume of car traffic and travel times throughout the county. The impact it will have on the landscape will be considerable, as the new road will be significantly larger than the existing N3 national primary road.

This LCA is of National/International Importance. At present it does not meet the full criteria for International Importance (page 4) but it does have sufficient landscape heritage merit to warrant its promotion as an international attraction and an application for an international designation by UNESCO.

#### 3.8.2.2.2 Key Characteristics

##### 3.8.2.2.2.1 Geology and Soils

- Complex drumlin landform created by glacial movement.
- Limestone is overlain by a variety of rocks and soils – boulder clay, kames and eskers - most of which have been deposited by melting glaciers.
- Comprised of shales with interbedded limestone, conglomeratic limestone and calp limestone forming deep and shallow free draining acidic soils.
- Ground conditions suit those trees that thrive in free draining soil such as beech, oak, ash and lime.

##### 3.8.2.2.2.2 Land Use

- Mix of small – medium pasture fields.
- Well-wooded hedgerows with mature trees.
- N3 National primary route from Navan - Dunshaughlin.

##### 3.8.2.2.2.3 Ecology and Habitat

- No designations.
- Strong network of hedgerows.
- Many mature trees and broadleaf copses.

- Well-managed agricultural farmland.

#### 3.8.2.2.2.4 History and Culture

- Long established mixed scale farmland.
- Estate landscapes.
- Hill of Tara, site of the home of the ancient High Kings of Ireland and giving the title 'Royal County' to Meath.
- St Columba's Church ruins, with visual link to Tara, is the site of the place chosen for safekeeping the Saint's shrine during the C11th, Augustinian abbey was founded later although the ruins are those of the parish Church built in the C15th.
- Skryne Hill and church is a mediaeval tower ('the lands of Skryne were granted by Hugh de Lacy to Adam de Fergo who in 1172 held a motte and castle here')
- Railway architecture / bridges
- Lismullen, Corbalton Hall
- Kileen Castle, started 1180 by Hugh de Lacy now in ruins.

#### 3.8.2.2.2.5 Tourism

- Hill of Tara is one of the main heritage tourist attractions in County Meath and Ireland and provides panoramic views over the lowlands.
- The Hill of Tara is linked to the Tain Trail heritage trail.
- Skryne Church is important landmark and provides panoramic views towards the Hill of Tara.

#### 3.8.2.2.2.6 Settlements and Built Structures

- Kilmessan (see description of key settlements).
- Settlement type is predominantly small villages/ graigs including Edoxtown, Oberstown and Skryne which are all relatively intact and unspoilt.
- Built development in countryside consists of individual dwellings, generally modern rather than traditional buildings with a large concentration of modern development adjacent to Kilmessan.

#### 3.8.2.2.2.3 Description of the Key Settlements

- Dunshaughlin: Medium sized town that has developed rapidly in recent years due to close proximity to Dublin Metropolitan Area and M3. Lack of vernacular buildings in town. Modern development throughout town particularly on edges.
- Kilmessan: Small town which has developed rapidly in recent years. Lack of local vernacular. Modern development throughout town with concentrations on outskirts.

#### Forces of Change

- The proposed M3 motorway will dramatically change the scale of road infrastructure and the interchange at Dunshaughlin may have knock-on effects for development in this LCA.
- Significant residential development in Kilmessan has significantly increased the scale and eroded the character of the village.

Recommendations for the Landscape designated site LCA12 Tara / Skryne Hills within the County Development are very relevant for the proposed development. In particular recommendations 2, 3 and 4 which bear relevance to the proposed development and to future landscape impacts on the designated landscape:

#### Recommendations

1. Submit an application to UNESCO for an International Designation. Once this has been lodged, there is a strong case for treating the site as a 'Potential Site of International Importance' and putting in place policies that will afford it protection in keeping with this status. In our opinion the Hill of Tara is worthy of an application on the basis of its rarity, scale, age and undoubted importance in Irish history. The Hill of Tara already attracts a significant number of international visitors.
2. Preserve the landscape around the Hills of Tara and Skryne as part of a nationally/internationally culturally important landscape including conservation of the setting of both hills due to their prominence within the wider landscape and panoramic nature of views afforded from them.
3. Protect and maintain the wooded character at the base of both hills as a buffer to development in adjacent lowland areas and as an integral part of the character of the hilltops.
4. Develop design guidance for landscape treatment and architectural design of new development with particular reference to transport routes and existing settlements of Summerhill, Kilmessan and Dunshaughlin.
5. Preserve Skryne church as a landmark within the wider lowland landscape.

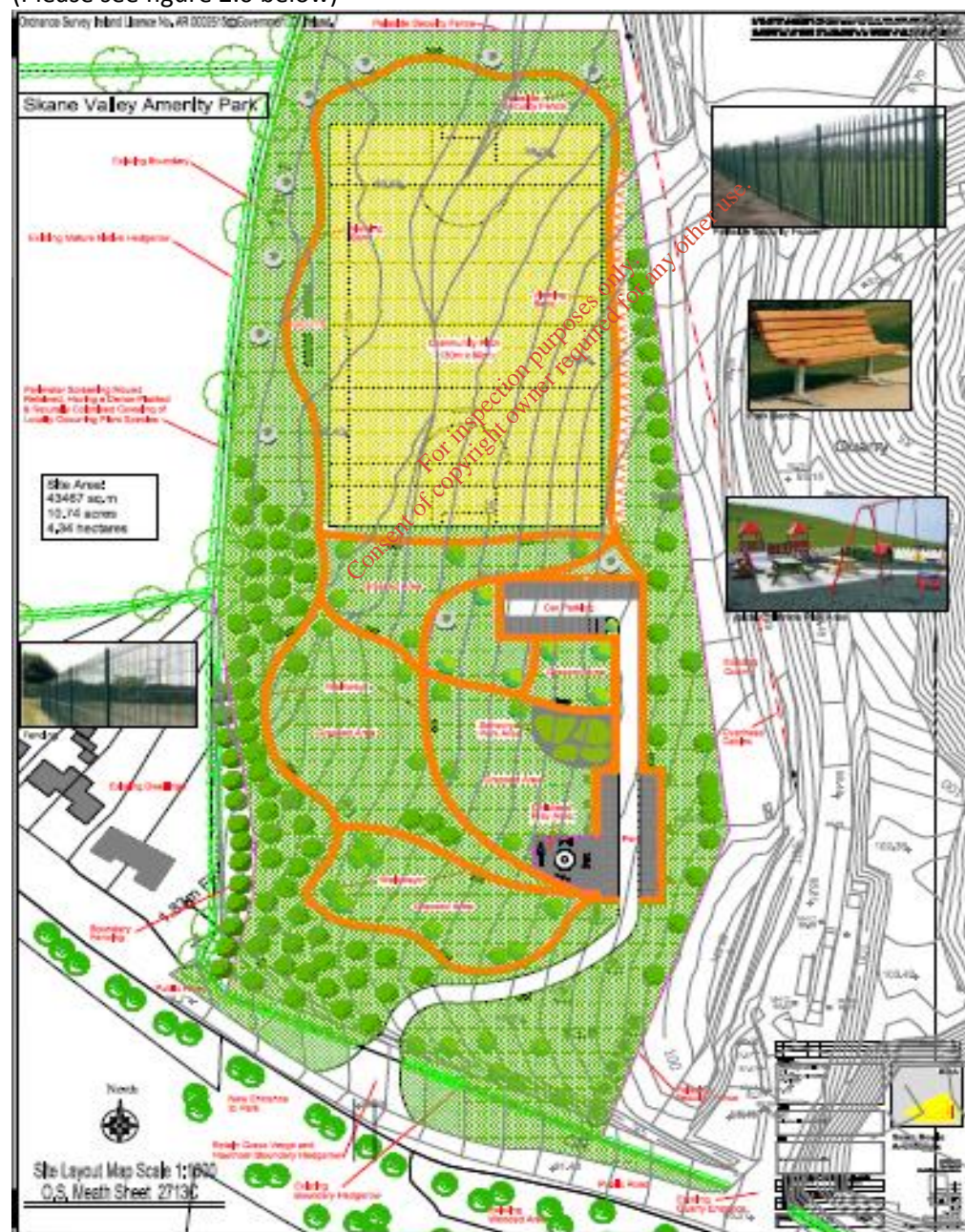


6. Seek to consolidate existing settlements by locating new development within urban areas rather than as one-off developments within rural areas.
7. Improve directional signage for the Hill of Tara from the N3 and other secondary transport routes.

Particular cognisance must be paid to the proposed site and the impacts that the site may have in relation to the Hills of Tara and Skryne.

### 3.8.2.2.3 Outdoor Recreational Facilities within the study area.

A New Public Amenity Park is proposed next to the proposed recovery area in the Quarry. (Please see figure 2.0 below)



The park will have amongst other elements, a sports field, a walkway (1.2km approx.), a car park, a children's playground, a sensory area, all constructed with a view towards giving back to the local area and giving the local community something that has been identified in the County Development Plan as a requirement for the village of Kilmessan.

This park will have a separate entrance approximately 200m south of the main access to the quarry and will again not be visible from the local roadway L2206. In relation to the houses. Through the process of public consultation the neighbours intimated that they would not be comfortable for the site to be visible from their back gardens and so a screening plan has been suggested which will prevent the site from being visible to the nearest sensitive visual receptors.

#### 3.8.2.2.4 Site Specific Landscape Appraisal

The application site and existing quarry are located within a 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 extraction activities have been significantly reduced at the site due to the current economic climate, it has planning permission to continue well into future. (10 Years from now)

There are a number of 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.

The Quarry site is bounded to the South by the L2206 local road which functions as an 80kph county road within Meath County Council's road hierarchy. Along the length of the L2206 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. The sloping topography, in conjunction with the tree lined hedgerows has the potential to accommodate the proposed development.

#### 3.8.2.3 Visual Baseline

##### 3.8.2.3.1 General Visibility

The visibility of the application site was assessed by a desktop study of OSI Maps, available aerial photography & detailed site survey. Views of the site from locations to the north, south, east & west are limited due to the topography of the land and dense vegetation to the boundaries. A photographic survey of the visual impact of the proposed development on the adjoining area was undertaken to confirm the findings of the Landscape Assessment as described above. Figure 2.0, shows the locations of the seven photographs and indicates the significant visual barriers that help to screen the development site from outside public views. Please refer to each plate, which are annotated accordingly.

There are no direct views into the site from adjoining public roads due to the existing visual screening mounds strategically placed around the quarry. Photographs taken at locations 1, 2 & 3 along the Public Road L2206 show the improved site entrance and the screening in place around the site. The Layout Plan for the Community Amenity Park shows the Location of the proposed new entrance. (See attached EIS Drawing)

Photographs taken at locations 4 & 5 are further away at Lambertstown townland along the L2206 and at Athronan Bridge near Dunsany, south of Tullykane Quarry. There are no views into the quarry from these locations. The view from Location 6 is taken from the highest point within the quarry site looking north towards the Hill of Tara. The view from location 7 is taken from the Hill of Tara towards Tullykane Quarry. This photograph successfully highlights the aspect of the quarry with respect to Tara. As can be seen, the quarry is south of Tara and the glare from the sun makes it difficult to pick out the quarry, below the horizon.

### 3.8.2.3.2 Visual Receptors

Visual receptors are people living in the area, people who work there, people passing through on road, or other forms of transport, people visiting promoted landscapes or attractions, and people engaged in recreation of different types.

Visual receptors include users of the L2206 who get a glimpse of the site entrance as they pass it and view the temporary overburden stockpile which will be reinstated as part of the restoration process. Private residents adjacent to the Community Amenity Park to west of the Quarry Site may see part of the Community Amenity Park.

The views of the road users along the L2206 are grouped into one visual Receptor Area, as the views from all locations within this area are similar.

Visual Receptor Area No.	Approximate Location / Extent	Types Of Receptor	Nature of Views / Visual Amenity
1	Approximately 400m to the West and East of the entrance	Road Users	Short Distance views towards the site entrance and access road – <b>Medium visual amenity</b>
2	Private Dwelling	People living in the area	Views of temporary overburden stockpile – <b>Medium Visual Amenity</b>

Photography and fieldwork analysis of views of the site were carried out from the surrounding landscape. The object was to determine which locations offer the clearest views of the application site and/or are most accessible to the public and to identify representative viewpoints for detailed viewpoint analysis. The existing views from each of these points are briefly described with the aid of photographs.

### 3.8.2.4 Difficulties Encountered

No difficulties were encountered in obtaining baseline landscape data and site specific data to conduct the Landscape visual assessment for the proposed development.

### 3.8.3 Impact Assessment

#### 3.8.3.1 Evaluation Methodology

As described, the assessment of sensitivity will incorporate judgements about the:

- A. Susceptibility of the receptor to the type of change arising from the specific proposal; and the value attached to the receptor.
- B. Each of the visual effects identified needs to be evaluated in terms of its:
- C. size or scale,
- D. the geographical extent of the area influenced, and its duration and reversibility.

The judgements about the sensitivity and magnitude are supported by a number of pre-defined parameters as described below. Word scales, with ideally three or four categories, are preferred as the means of summarising judgements for each of the contributing criteria.

##### 3.8.3.1.1 Landscape Sensitivity

Landscape receptors need to be assessed firstly in terms of their sensitivity, combining judgements of their susceptibility to the type of change or development proposed and the value attached to the landscape.

Landscape Visual Impact Assessment sensitivity is similar to the concept of landscape sensitivity used in the wider arena of landscape planning, but it is not the same as it is specific to the particular project or development that is being proposed and to the location in question.

Judgements about the susceptibility of landscape receptors to change should be recorded on a verbal scale (for example high, medium or low), but the basis for this must be clear, and linked back to evidence from the baseline study.

Landscape sensitivity is used to establish the capacity of the landscape to accommodate the type of development proposed and is defined as follows:

Landscape Sensitivity	Definition
High	Highest/Very Attractive landscape quality with highly valued or unique characteristics susceptible to relatively small changes.
Medium	Good landscape quality with moderately valued characteristics reasonably tolerant of changes
Low	Ordinary/Poor landscape quality with common characteristics capable of absorbing substantial change.



### 3.8.3.1.2 Susceptibility to change

This means the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular landscape type or area, or an individual element and/ or feature, or a particular aesthetic and perceptual aspect) to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/ or the achievement of landscape planning policies and strategies.

### 3.8.3.1.3 Viewpoint Sensitivity

Judgements about the susceptibility of visual receptors to change should be recorded on a verbal scale (high, medium or low) linked back to evidence from the baseline study.

Susceptibility	Visual Receptor Type
High	Residents at home; people. Whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focused on the landscape and on particular views; visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience, communities where views contribute to the landscape
Medium	Travellers on road, rail or any other means of transport
Low	People engaged in outdoor sport or recreation which does not involve or depend upon appreciation of views of the landscape; people at their place of work whose attention may be focused on their work or activity not on their surroundings, and where the setting is not important to the quality of working life (although there may on occasions be cases where views are an important contributor to the setting and to the quality of working life)

### 3.8.3.1.4 Magnitude of Landscape Resource Change

The magnitude of effects, made up of judgements about:

- the size and scale of the effect — for element of the example whether there is complete loss of a particular landscape or a minor change;
- the geographical extent of the area that will be affected the duration of the effect and its reversibility.
- Judging the magnitude of the visual effects identified needs to take account of:



- D. the scale of the change in the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view occupied by the proposed development;
- E. the degree of contrast or integration of any new features or changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale and mass, line, height, colour and texture;
- F. The nature of the view of the proposed development, in terms of the relative amount of time over which it will be experienced and whether views will be full, partial or glimpse.

The geographical extent of a visual effect will vary with different viewpoints and is likely to reflect:

- I. the angle of view in relation to the main activity of the receptor;
- II. the distance of the viewpoint from the proposed development;
- III. the extent of the area over which the changes would be visible.

The overall magnitude of the landscape/visual effects is summarised on a scale of

- i. 'high negative',
- ii. 'medium negative',
- iii. 'low negative',
- iv. 'negligible',
- v. 'high positive',
- vi. 'medium positive' or
- vii. 'low positive',

based on professional interpretation of the findings.

Magnitude	Description of Effect
High Negative	Total loss or large scale damage to existing character or distinctive features and elements, and/or the addition of new but uncharacteristic conspicuous features and elements
Medium Negative	Partial loss or noticeable damage to existing character or distinctive features and elements, and/or the addition of new but uncharacteristic conspicuous features and elements
Low Negative	Slight loss or noticeable damage to existing character or distinctive features and elements, and/or the addition of new but uncharacteristic conspicuous features and elements
Negligible	No noticeable loss, damage or alteration to character or features or elements
Low Positive	Slight improvement of character by the restoration of existing features and elements, and/or the removal of uncharacteristic features and elements, or by the addition of new characteristic elements
Medium Positive	Partial or noticeable improvement of character by the restoration of existing features and elements, and/or the removal of uncharacteristic and noticeable features and elements, or by the addition of new characteristic features.
High Positive	Large scale improvement of character by the restoration of features and elements, and/or the removal of uncharacteristic and conspicuous features and elements, or by the addition of new distinctive feature

### 3.8.3.1.5 Significance of Landscape Impacts

Significance	Definition
<b>Major</b>	Be at considerable variance with the character of the landscape.
<b>(Negative)</b>	Degrade or diminish the integrity of a range of characteristic features and elements. Damage the sense of place or local distinctiveness of an area.
<b>Moderate/Major</b>	Are likely to cause effects that meet some of the criteria from the above and below categories
<b>(Negative)</b>	
<b>Moderate</b>	Conflict with the character of the landscape.
<b>(Negative)</b>	Have an adverse impact on characteristic features or elements. Diminish the sense of place or local distinctiveness of an area.
<b>Minor/Moderate</b>	Likely to cause effects that meet the criteria from some of the above and below categories
<b>(Negative)</b>	
<b>Minor</b>	Not quite fit the character of the landscape.
<b>(Negative)</b>	Be at variance with characteristic features and elements. Detract from the sense of place or local distinctiveness of an area.
<b>Neutral</b>	Maintain the character (including quality and value) of the landscape. Blend in with characteristic features and elements. Enable a sense of place or local distinctiveness to be retained. Change which has balanced positive and negative effects
<b>Minor</b>	Complement the character (including quality and value) of the landscape.
<b>(Positive)</b>	Maintain or enhance characteristic features and elements. Enable some sense of place or local distinctiveness to be restored. Enable some restoration of established characteristic features partially lost through other land uses.
<b>Minor/Moderate</b>	Likely to cause effects that meet the criteria from some of the above and below categories
<b>(Positive)</b>	
<b>Moderate</b>	Improve the character of the landscape.
<b>(Positive)</b>	Enable the creation, repair, conservation or restoration of characteristic features and elements partially lost or diminished as a result of changes from inappropriate management or development.

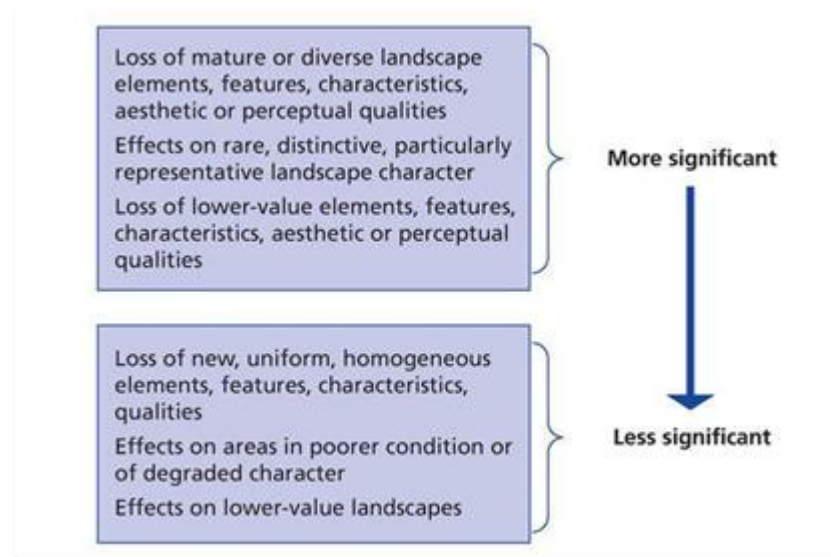
	Enable a sense of place or local distinctiveness to be restored.
	Enable good creation, repair, conservation or restoration of valued characteristic features partially lost through other land uses.
<b>Moderate/Major (Positive)</b>	Are likely to cause effects that meet some of the criteria from the above and below categories
<b>Major (Positive)</b>	Enhance the character of the landscape.
	Enable the restoration of characteristic features and elements lost as a result of changes from inappropriate management or development.
	Enable a sense of place or local distinctiveness to be enhanced.
	Enable significant creation, repair, conservation or restoration of valued characteristic features partially lost through other land uses.

The level of significance of impact on landscape character is a product of landscape sensitivity and the magnitude of change in landscape resource as indicated below:

Magnitude of landscape resource change	Landscape Sensitivity		
	Low	Medium	High
High Negative	Neutral	Minor (Negative)	Minor/Moderate (Negative)
Medium Negative	Minor (Positive)	Neutral	Minor (Negative)
Low Negative	Minor/Moderate (Positive)	Minor (Positive)	Neutral
Negligible	Moderate (Positive)	Minor/Moderate (Positive)	Minor (Positive)
Low Positive	Moderate/Major (Positive)	Moderate (Positive)	Minor/Moderate (Positive)
Medium Positive	Major (Positive)	Moderate/Major (Positive)	Moderate (Positive)
High Positive	Major (Positive)	Major (Positive)	Moderate/Major (Positive)

Principles of Assessing Significance of Landscape and Visual Impacts

### 3.8.3.1.5.1 Scale of Significance:



### 3.8.3.2 Landscape Impact

#### 3.8.3.2.1 Landscape Effects

The main landscape effects that will take place due to the proposed development will be the changes to the landform within the fill area, removal of the temporary stockpiles of overburden & additional hedgerow/trees. This will result in the creation of agricultural land in keeping with the surrounding landscape and profiled, levelled and finished off to integrate seamlessly with the local area. There will also be the creation of a new landscape feature through the development the proposed Public Amenity Park.

#### 3.8.3.2.2 Landscape Sensitivity

The site is located in an area of *High Sensitivity - Landscapes "the Central Lowlands (LCA6) and Tara Skryne Hills (LCA12)"*, as part of the Meath Landscape Character Assessment.

The application site is made up from extracted ground, with the exception of stockpiling to the perimeter of the extracted area. No major landscape elements will be affected by the proposed development, with the development, in fact, having a positive effect on the surrounding landscape.

There are number of scenic routes listed in the vicinity of the area, but, resulting from existing mature tree lined hedgerows & the surrounding landscape topography, the views of the proposed site are minimal from these routes.

On balance, the assessment made in the Meath Landscape Character Assessment, and the location of the site within a previously extracted Quarry Site, the sensitivity of *Tara Skane Valley* to the proposed development is assessed as MEDIUM. The sensitivity of individual landscape elements of the works is assessed as MEDIUM, as the proposed development will restore the lands to their original

form & topography and provide a Community Amenity Park on existing lands to the west of the proposed restoration site which will have a positive impact on the landscape form.

#### 3.8.3.2.3 Magnitude of Change to the landscape

See table 3.0 below describing size & scale, geographical extent & duration/reversibility of the identified landscape effects, and resulting judgement of their overall magnitude:

Parameter	Description
<b>Size &amp; Scale</b>	<p>An area of approximately 51.44 hectares will be restored to its original landform &amp; agricultural use, using imported inert material &amp; existing overburden stored on site.</p> <p>The overall scale of the landscape will not be affected by the proposed development, as all works are contained within an existing quarry. The Site also proposes a Community Amenity Park next the Quarry.</p> <p>The key characteristics of the landscape surrounding the site will be positively affected by the proposal as the lands will be restored to sloping agricultural lands.</p>
<b>Geographical Extent</b>	The effects will be experienced at site level only (within the development itself)
<b>Duration/Reversibility</b>	<p>The duration is considered long term as the impact on the landform will be permanent.</p> <p>The proposed development will reverse the impact of the previous extraction of the lands which is taken place, by reinstating the lands to the original landform.</p>
<b>Overall Magnitude</b>	<p>The changes due to the proposed development will have a positive effect on overall landscape character.</p> <p>The overall magnitude of the landscape effect, due to the proposed development is assessed as <b>MEDIUM POSITIVE</b></p>

#### 3.8.3.2.4 Significance of the Landscape Impact

The sensitivity of the Tara-Skane Valley Area affected by the proposed development is assessed as MEDIUM. Combining this with the MEDIUM POSITIVE magnitude of the landscape effects results in a **MODERATE/MAJOR (POSITIVE)** level of landscape impact

The sensitivity of the individual landscape elements affected by the proposed development is assessed as MEDIUM. Combining this with the MEDIUM POSITIVE magnitude of the landscape effects results in a **MODERATE/MAJOR (POSITIVE)** level of landscape impact.



### 3.8.3.3 Visual Impacts

#### 3.8.3.3.1 Visual Effects

The visual effects that will take place due to the proposed development will be the visibility of lorries accessing the entrance from the L2206. Due to the dense Vegetation and Existing Screen Mounds around the boundary, no on site activities will be visible from publicly accessible areas to the proposed restoration area or the Public Amenity Park.

#### 3.8.3.3.2 Visual Receptor Sensitivity

The effect in terms of sensitivity is made up of judgements on the susceptibility of the receptor to the type of change arising from the specific proposal and the value attached to the receptor;

Visual Receptor Area No.	Susceptibility	Value	Overall Sensitivity
1	Medium -	Views to and from Kilmessan and Views of Skane Valley and on the CR474 and adjoining Roads (LCA6) Views to and from The Hill of Tara and Tara Skryne Hills and on the CR474 and adjoining roads	MEDIUM
2	Medium – Private dwelling	No protected view	MEDIUM

#### 3.8.3.3.3 Magnitude of Change to Viewpoints

The magnitude is made up of judgements about:

- (i) The size and scale of the effect:
- (ii) The geographical extent of the area that will be affected and the duration of the effect and
- (iii) Its' reversibility.

Visual Receptor Area No.	Description of Magnitude of Change	Overall Magnitude
1	<p><b>Size and scale of the effect</b></p> <p>Elements of the proposed development visible in views from the visual receptor area will only be lorries accessing the site from L2206.</p> <p>Due to the dense vegetation to the L2206 boundary, no on site activities will be visible from publicly accessible areas.</p> <p>Views by road users are limited to the time it takes to pass the site entrance.</p> <p><b>Geographical extent of the area that will be affected</b></p> <p>Users of the L2206 who get a glimpse of the site entrance as they pass it &amp; view the temporary overburden stockpile which will be reinstated as part of the restoration process.</p> <p>Views of the road users along the L2206 from all locations within this area are similar.</p> <p><b>Duration of the effect and its reversibility</b></p> <p>It is expected to take c14 years to complete the restoration process, which means the visual effects will be temporary &amp; there will be no lasting visual effects on completion</p>	<p>MEDIUM</p> <p>POSITIVE</p>

#### 3.8.3.3.4 Significance of Visual Impact

Based on the sensitivity of the visual receptors (medium) combined with the magnitude of the visual effects (medium positive), the significance of visual effects is assessed as Moderate/Major (Positive).

The Landscape Assessment, Line of Sight Assessment and the Photographic Survey clearly demonstrate that there will be no impact on the surrounding landscape, road network and hence the residential amenity associated with it. The topography of the immediate area acts as an effective natural screen, so much so that the continued development of the site will not impact at all on the surrounding landscape.

It is proposed to extend the quarry operations within the existing approved quarry extraction footprint, this will take place below the surrounding ground level over a 20 year period, grass seeded soil mounds are already in place to screen the development.

The upper sections of the southern quarry faces and banks are visible from Tara, but only form a small portion of the all-round vista from Tara. The rock being quarried is dark, resulting in unobtrusive features (compared to a white limestone for example). The quarry is not seen against the skyline with Ringlestown Rath forming a more prominent focus feature when viewing from Tara.

Large sections of the southern quarry face have been covered with subsoil and will 'green-up' with time. The main access road down into the quarry is visible from Tara, but is no different than any road that can be seen from this vantage point and can't be considered a significant impact.

With binoculars it can be determined that the current working floor of the quarry is not visible from the Hill of Tara. This will not change over time as extraction has advanced to its limit both north and south in the quarry and the northern screening mound will remain in place for the duration of development. The Proposed back fill restoration scheme allows for the quarry void to fill with inert soil and stone. Since the water table is below the existing quarry floor it can be concluded that the works will not be visible from Tara at all. There will be no significant impact from the Proposed Back Fill and Community Park at Tullykane either during the Intake of materials or Final Restoration to Agriculture.

#### 3.8.3.4 Impacts on Landscape/Planning Designations

##### 3.4.1 Extractive Industry Policy

The proposed development will result in the restoration of the existing quarry to agricultural use which is in line with Extractive Industry Policy of Meath County Development Plan 2013-2019. As part of the existing planning permission 99/1230, the permission allows for the quarry to be re-instated after use to a lake. This will not however be the case in the proposed development.

##### 3.4.2 Scenic Routes and Protected Views

The proposed development will not be visible from any of the described views along scenic routes due to existing mature vegetation & the topography of the lands, and will therefore not have any visual impact on this designation.

Within this landscape are a number of visual units that are contained by the landforms and land cover of the area, these units have been delineated on the attached fig 4.0 below. A description of the main limiting factors that affect the extent of views within each unit follows below.



the general elevation of the site. To

The general elevation of the site: 10

3. Unit 3 is the Tara Skryne Valley to the north and east of the Hill of Tara. This unit is not visible from Unit 1 or vice versa, and there will not therefore be any impact on it arising from the existence of the proposed development.

4. This unit comprises a low wide valley of a tributary of the River Skane rising south of Belpere Hill and flowing south to the River Skane at Dunsany Demesne. The unit is dominated by ribbon development along the county roads that run through the landscape and the hamlet of Dunsany with its church, school and post office. Inter-visibility between Units 2 and 1 are very limited because of the ridgeline referred to earlier between Belpere and Odder. The Inter-visibility is further restricted by matures hedgerow and tree stands that break up the landscape into smaller visual units again.

5. Located on the fringe of the study area this unit is similar in character to Unit 4. Killen Castle, currently under developed as a luxury hotel and golf complex dominates this Unit. When completed Killeen Castle will be a major recreational amenity for the area. There is no Inter-visibility between Units 1 and 5, so there will be no impact on this Unit and the enterprise at Killeen Castle from the continued development of Tullykane Quarry.

Unit 6 is separated from Unit 5 by the northern most extent of Galtrim Moraine, a low wooded ridge of glacial derived sands and gravels. Swainstown House and Demesne dictate the character of this visual unit. The Unit is crossed by overhead power lines and the disused Clonsilla to Navan railway line. The estate parkland occupies the low valley of the Skane River and the southern flanks of Swainstown/Tullykane Hill. The elevation of the majority of the unit is at 70mAOD, which results in Unit 1 and the quarry being totally screened from views because of the higher intervening Swainstown/Tullykane Hill ridge. The low flood plain and wide valley of the Skane River north west of Tullykane Quarry has very limited views into Unit 1 which is situated at a higher elevation. There are no views into the quarry from this Unit. There will be no impact on Unit 7 from the existence of the quarry at Tullykane.

#### 3.8.3.5 “Do Nothing Scenario”

If the proposed development were not to be carried out, the planning application site would continue open and the extraction would continue until restoration in 15 to 20 years slowly re-colonised with locally occurring grass and scrub species with a deep lake. Visually as per the previous extraction planning permission the landscape would remain at medium impact from the development. The finalised product would be very different and the accumulated potential value of the development in terms of the generation of a public amenity park and approximately 46 hectares of new agricultural land would not materialise.

#### 3.8.4.0 Mitigation Measures

Measures taken to further minimise the potential visual impacts associated with the existing and proposed development can be classified as; Avoidance mitigation.



The primary measure taken to minimise visual impacts is through their avoidance. It is considered that the existing hedgerows along the site boundary and the surrounding topography, will ensure that the visual impact of the development is not significant.

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 convex 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.

#### 3.8.5.0 Residual Impacts

The assessment has found that overall the proposed development will have a positive impact on the general landscape character within the study area.

#### 3.8.6.0 References

Guidelines for Landscape and Visual Impact Assessment Third Edition Landscape Institute and Institute of Environmental Management & Assessment, Routledge

Meath County Development Plan 2013 - 2019

DoEHLG (2004) publication. Quarries and Ancillary Activities: Guidelines for Planning Authorities

## 3.9 Cultural Heritage

### 3.9.1 Introduction

#### 3.9.1.1 Outline Scope of Works

##### 3.9.1.1.1 General

This report has been prepared on behalf of Kilsaran Concrete. in order to assess and define the impact, if any, on the archaeological, architectural and cultural heritage resource of the continued operation of a Waste Recovery Facility (WRF) at Tullykane, Kilmessan, County Meath. The assessment was prepared by Dr. Charles Mount who has more than twenty-five years of cultural heritage assessment experience. He holds B.A., M.A. and Ph.D. degrees in archaeology as well as a professional diploma in EIA and SEA Management and is a board member of the Institute of Archaeologists of Ireland.

This desk-based study will determine, as far as is reasonably possible from existing records, the nature of the cultural heritage resource within the proposed development area using appropriate methods of study.

The study involved interrogation of the archaeological and historical background of the proposed development area. This included information from the Record of Monuments and Places (RMP) of County Meath, Topographical Files of the National Museum of Ireland, Meath County Development Plan 2013-2019, cartographic sources, documentary records and aerial photographs. A number of field inspections were carried out between July 2016 and January 2017 in an attempt to identify any previously unrecorded features and/or portable finds within the proposed development area.

A study area of 1km has been imposed around the area of land take.

An impact assessment and mitigation strategy has been prepared. The impact assessment is undertaken to outline potential adverse impacts the proposed development may have on the archaeological, architectural or cultural heritage resource, while the mitigation strategy is designed to avoid, reduce or offset such adverse impacts.

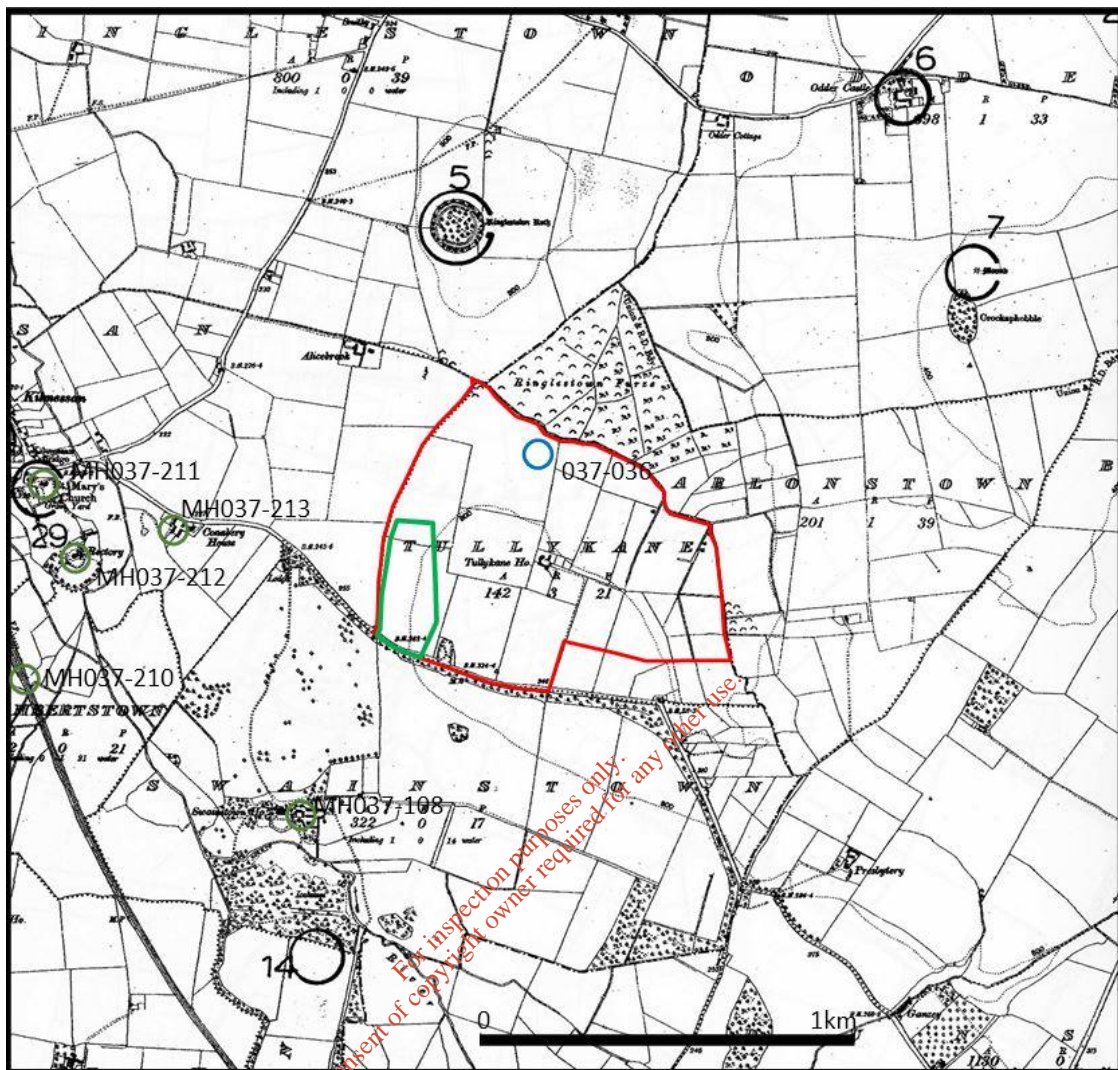
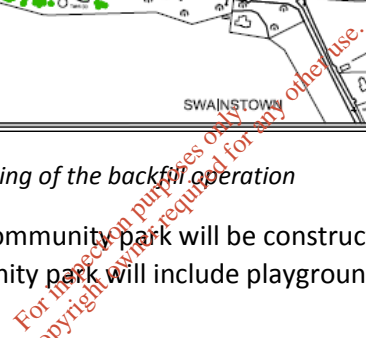


Fig: 3.9.1 Study Area The study area superimposed on the Record of Monuments map for Co. Meath. The application area is outlined in red. Recorded Monuments are indicated with black circles. Sites listed in the County Meath Record of Protected Structures are indicated with green circles. The proposed community and amenity park is indicated by the green line and the soil recovery activity will take place in the rest of the application area.

#### 3.9.1.1.2 The Development

The proposed development comprises the backfilling of the current quarry void with inert soil and stone under a Waste License from the Environmental Protection Agency (EPA). A small quantity of concrete will also be accepted to be used to construct internal roads. The quarry void is currently being dewatered on an ongoing basis and once the backfilling is completed, the groundwater table will be allowed to recover to its natural level. This proposal provides for the importation, placement and capping of approximately 5,600,000 tonnes of inert soil and stone including a proportion of inert construction materials (concrete, block, brick, paving stones, granular fill, ceramics etc.) for the construction of haul roads. The inert materials will be imported by permitted waste contractors only. It is proposed in this applications that the project in its entirety will take 14 years to complete at a backfill rate of 400,000T per annum.



Valley Authority Park



### 3.9.2 Baseline Environmental Study

#### 3.9.2.1 Methodology

Research has been undertaken in two phases. The first phase comprised a desktop survey of archaeological, historical and cartographic sources. The second phase involved a field inspection of the proposed development area.

#### 3.9.2.2 Desktop Survey

The following sources were examined, and a list of sites and areas of archaeological, architectural or cultural heritage potential was compiled:

- Record of Monuments and Places of County Meath;
- Topographical Files of the National Museum of Ireland;
- Cartographic and documentary sources relating to the study area;
- Aerial photographs of Ordnance Survey Ireland and Bing aerial photography;
- Meath County Development Plan 2013 – 2019;
- National Inventory of Architectural Heritage.

Record of Monuments and Places is a list of archaeological sites known to the National Monuments Service. Back-up files of the Sites and Monuments Record (SMR) provide details of documentary sources and field inspections where these have taken place.

Topographical Files of the National Museum of Ireland is the national archive of all known finds recorded by the National Museum. This archive relates primarily to artefacts, but also includes references to monuments and unique records of previous excavations. The find spots of artefacts are important sources of information on the discovery of sites of archaeological significance.

Cartographic sources are important in tracing land use development within the area of proposed land take, as well as providing important topographical information on sites and areas of archaeological potential. Cartographic analysis of relevant maps has been made to identify any topographical anomalies that may no longer remain within the landscape.

Documentary sources were consulted to gain background information on the historical and archaeological landscape of the proposed development area.

Aerial photographic coverage is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its potential to contain previously unidentified archaeological remains.

Meath County Development Plan 2013-2019 contains Policies and Objectives on the preservation and management of archaeological, architectural and cultural heritage features. They were consulted to obtain information on sites within the proposed development area and the 1km study area.

National Inventory of Architectural Heritage (NIAH) is a section within the Department of Arts, Heritage and the Gaeltacht (DoAHG). The work of NIAH involves identifying and recording on a non-statutory basis the architectural heritage of Ireland from 1700 to the present day. The NIAH website also contains a non-statutory register of historic gardens and designed landscapes in Meath, and



this was assessed to look for the presence of any such features within the proposed development area and the 1km study area.

#### 3.9.2.2 Field Study

Field inspection is necessary to determine the extent, character and condition of archaeological, architectural and cultural heritage remains, and can also lead to the identification of previously unrecorded or suspected sites and portable finds through topographical observation and local information.

### 3.9.3 Receiving Environment, Archaeological and Historical Landscape

#### 3.9.3.1 The Landscape

The site is situated in the south-east part of Co. Meath, to the south-east of Kilmessan and immediately north of the Kilmessan to Dunsany road. The site is situated on sloping ground between 80-103m OD. The general soils of the study area are grey brown podzolics associated with gleys which are derived from Irish Sea Till. The bedrock is Limestone. (Gardiner and Radford 1980; McConnell and Gatley 2006).

#### 3.9.3.2 Cultural and historical development of the study area

The following is a documentation of the cultural and historical development of the study area intended to place the sites and monuments that are known from the surrounding landscape in context. The development is situated in the parish of Kilmessan and the barony of Lower Deece.

##### Prehistoric Period

There are no Neolithic sites or monuments known from the study area. An earthen mound (ME037-007---), probably a barrow, from Odder to the north-east of the development is probably a burial monument of the Bronze Age period. The Hillfort (ME037-005--) in Ringlestown townland, to the north of the development, would have been constructed and used sometime between the first millennium BC and the first few centuries AD, and indicates that this part of the study area was a focus for activity in the Bronze Age/Iron Age period.

##### Early Medieval Period

In the Early Medieval period the barony of Deece was known as *Deisi Temro*, the vassal peoples of Tara. Settlement at this period is usually indicated by the presence of enclosed farmsteads known as ringforts and cashels. However, there are no ringforts known from the study area. The only possible enclosure site is the circular cropmark identified from an aerial photograph to the south of the development at Athronan.

##### Medieval Period

In 1172 King Henry II granted the Kingdom of Meath to Hugh de Lacy to hold as King Murrough O Melaghlín, King of Meath, had held it (Otway-Ruthven 1980, 52). De Lacy granted Hugh de Huse (Hussey) the barony of Deece and de Huse established himself as the Baron of Galtrim.

At some point in the Medieval period part of the study area was granted to Llanthony Priory as the Crown Surveys of 1540-41 noted that the Rectory of Kylmessan (Kilmessan) was held by Llanthony

Priory and included the townlands of Kylmessan (Kilmessan), Kylcarte (Kilcarty) and Ryngelston (Ringlestown) (Mac Niocaill 1992, 41-2).

The process of sub-infeudation is normally associated with the construction of earth and timber castles, known as Motte and Baileys. These earthwork fortifications were used to house and defend the Norman lords and their retinues while they set about the process of pacifying and organizing their new fiefs. There are no Mottes in the study area. There is a possible example north-west near the River Boyne at Scurlockstown (RMP ME037-009--) and a definite example to the south-east at Ginnets Great (RMP ME037-020---).

Manorialism describes the organisation of the feudal rural economy and society characterised by the vesting of legal and economic power in a Lord supported economically from his own direct landholding and from the obligatory contributions of a legally subject part of the peasant population under his jurisdiction. In Ireland the Lord's Manor House was also sometimes enclosed by a rectangular moat and these sites are referred to as moated sites. They are a useful indicator of Anglo-Norman settlement. There are no known moated sites in the study area or surrounding landscape.

However, Medieval settlement activity in the study is indicated by the discovery of a Medieval settlement in Tullykane townland (00E0264) during the course of soil stripping the current quarry footprint in 2000. Features consisted of a rectangular structure and a second structure associated with ditches, gullies, pits, hearths and burnt spreads associated with thousands of sherds of thirteenth century pottery.

#### The Later Medieval Period

The fifteenth century was characterised by the decline of Anglo-Norman power in Ireland which had been ebbing since the early fourteenth century. Part of the response to this was the construction of masonry tower houses which sprang up after King Henry VI introduced a building subsidy of £10 in 1429 (Sweetman 1999, 137). There is a single tower house in the study area at Odder (ME037-006--), however the Archaeological Survey (Moore 1987, No. 1768.) suggests this structure dates to the seventeenth century and not the Medieval period. After 1447 Sir Nicholas Bar wall of—Crickstown acquired the manor of Kilmessan (Kavanagh 2005,14).

#### The Post-Medieval Period

In the sixteenth century Kilmessan was held by Thomas Cusake who paid the Abbey 12 li (White 1943, 316). The Civil Survey for Co. Meath records that in 1640 Tullaghkean (Tullykane) belonged to Sir Richard Barnwall of Crickstown and was composed of 30 acres of arable and 3 of pasture (Simington 1940). Barnwall also held Athronan, Kilmessan, Ringelstowne (Ringelstown), Belper (Belpere) and Arlonstowne. Swainestown (Swainstown) and Kilcarty were owned by Sir Robert Talbott. Lamerstowne (Lambertstown) was held by Richard Balfe. Donsany (Dunsany) was held by Patrick Lord Baron of Donsany. Odder was held by Doctor Benjamin Culme and a stone house and malt house are record in the townland but no castle.

### 3.9.4 Buildings

#### Section 261 of the Planning Act 2000: Guidelines for Planning Authorities

The Guidelines for Planning Authorities: Quarries and Ancillary Activities published by the DoEHLG in April 2004 to implement Section 261 of the Planning Act 2000 state in section 3.8 Cultural Heritage:

*If the development plan indicates the presence of any protected structures on or near the site (such as might be affected by blast vibrations, for instance), the planning officer or conservation officer of the relevant local authority, and the Department, should be consulted at the pre-application stage.*

This guidance has been followed in the preparation of this report.

Heritage Policy and Architecture Protection section of DoEHLG.

At a meeting between the Irish Concrete Federation and the Heritage Policy and Architecture Protection section of DoEHLG on 15 March 2007 it was agreed that there was no impact from quarries at a distance greater than 300m and more than 10m along roads and that only structures within these areas need be assessed.

#### Detail

There are 15 structures within the wider area proximate to the site and 5 structures within the study area (1 km from the site) listed as Protected Structures in the Meath County Development Plans 2003 – 2009 and 2013-19. They are noted below:

#### *MH037-108 R Swainstown Kilmessan Country House*

Seven-bay, two-storey over half basement house, with three-bay, two-storey pavilions to either end, linked to central block with quadrant walls, built c1750 by Nathaniel Preston.

MH037-108 R Swainstown Kilmessan Country House
Designation: Protected Structure
Data Source: Meath County Development Plan 2013-19 Record of Protected Structures
Perceived significance: Regional
Type of Impact: None
Seven-bay, two-storey over half basement house, with three-bay, two-storey pavilions to either end, linked to central block with quadrant walls, built c1750 by Nathaniel Preston.

#### *MH037-203 R 14329005 Railway Bridge Kilmessan Railway Bridge*

Single-arch rock faced limestone railway bridge with string courses and copings,. built c.1862, carrying the road over the former railway track which is now disused. Remains of limestone kerbing to platform and turntable to site.

MH037-210 R 14329016 Railway Bridge Kilmessan Railway Bridge
Data Source: Meath County Development Plan 2013-19 Record of Protected Structures
Perceived significance: Regional
Type of Impact: None
Single-arch rock faced limestone railway bridge with string courses and copings, built c.1862, carrying the road over the former railway track which is now disused.

*MH037-211 R 14329013 Kilmessan Church of Ireland Church Kilmessan Church (C of I)*

Detached church, built 1731, and renovated c.1820. Graveyard to east and south, enclosed by rubble stone walls, with pair of wrought-iron gates.

MH037-211 R 14329013 Kilmessan Church of Ireland Church Kilmessan Church ( C of I )
Data Source: Meath County Development Plan 2013-19 Record of Protected Structures
Perceived significance: Regional
Type of Impact: None
Detached church, built 1731, and renovated c.1820. Graveyard to east and south, enclosed by rubble stone walls, with pair of wrought-iron gates.

*MH037-212 R 14329014 Kilmessan Rectory Kilmessan House (detached)*

Detached three-bay two-storey house over semi-basement, built c.1800, with central breakfront, and flanking single-storey wings. Hipped slate roof with rendered chimneystack. Roughcast rendered walls.

MH037-212 R 14329014 Kilmessan Rectory Kilmessan House (detached )
Data Source: Meath County Development Plan 2013-19 Record of Protected Structures
Perceived significance: Regional
Type of Impact: None
Detached three-bay two-storey house over semi-basement, built c.1800, with central breakfront, and flanking single-storey wings. Hipped slate roof with rendered chimneystack. Roughcast rendered walls.

*MH037-213 R 14329017 Conabery House Kilmessan House*

Detached three-bay two-storey house, built c.1870, now disused. Hipped slate roof and rendered chimneystacks. Rendered walls. Timber sash windows with stone sills. Round-arched opening with original timber panelled door and plain glass fanlight.

MH037-213 R 14329017 Conabery House Kilmessan House
Data Source: Meath County Development Plan 2013-19 Record of Protected Structures
Perceived significance: Regional
Type of Impact: None
Detached three-bay two-storey house, built c.1870, now disused. Hipped slate roof and rendered chimneystacks. Rendered walls. Timber sash windows with stone sills. Round-arched opening with original timber panelled door and plain glass fanlight.

Outside the study area but proximate to the site:

*MH037-204 R 14329002 Station House Hotel Kilmessan Former Train Station*

Detached three-bay two-storey former railway station, built c. 1862, with projecting gabled central bay and single-storey wings to north and west. Now in use as a hotel. Pitched slate roof with rendered chimneystacks.

*MH037-205 R 14329015 Railway Bridge Kilmessan Railway Bridge*

Single-arch rock faced limestone railway bridge with string courses and copings, built c.1862, carrying the road over the former railway track which is now disused.

*MH037-207 R 14329009 Church of the Nativity of Mary Kilmessan Church (R C)*

Detached cruciform-plan church, commenced c.1820, and rebuilt c.1895, with bellcote to north-west corner.

*MH037-208 R 14329007 Water pump Kilmessan Water pump*

Cast-iron water pump, c.1870, with foundry mark, banded shaft, fluted neck, cap, finial and spout, and curved pumping handle.

*MH037-209 R 14329010 St. Josephs National School Kilmessan National School*

Detached five-bay two-storey former national school, built c.1927, with three-storey and single-storey extensions to rear, now disused. Hipped artificial slate roof with rendered chimneystacks.

*MH037-210 R 14329016 Railway Bridge Kilmessan Railway Bridge*

Single-arch rock faced limestone railway bridge with string courses and copings, built c.1862, carrying the road over the former railway track which is now disused.

*MH037-109 R Ringlestown House Ringlestown Kilmessan Country house*

A Victorian House in the late Georgian manner. It was the seat of the Pringle Family.

*MH037-200 R 14329001 Kilmessan House Kilmessan Public House*

Detached three-bay two-storey house, built c.1890, now also in use as a public house. Hipped slate roof with rendered chimneystacks, and cast-iron ridge cresting and finials.

*MH037-201 R 14329003 Signal Box Kilmessan Signal Box*

Detached gable-fronted single-bay two-storey former signal box, built c.1862, now in use as hotel accommodation. Pitched artificial slate roof with rendered chimneystack.

*MH037-202 R 14329004 Station House Hotel Kilmessan Warehouse*

Detached four-bay single-storey former railway warehouse, built c.1862, now in use as hotel accommodation. Pitched artificial slate roof with skylights. Rubble limestone walls with limestone string course.

The closest example, Swainstown House, is situated 575m from the development and has no views of the quarry (see Figs. 3.9.1 and 3.9.3).





Fig 3.9.1 View of Swainstown House



Fig 3.9.2 View from Swainstown House towards the Tullykane quarry

### Impacts

The development will comply with the EPA Guidelines on Environmental Management in the Extractive Industry (EPA 2006) and Quarries and Ancillary Activities, Guidelines for Planning Authorities (DOEHLG 2004) and will therefore have no impact on Protected Structures at a distance from the development or any structures of heritage interest.

### 3.9.5 Archaeology

#### 3.9.5.1 Archaeological Assessment

##### 3.9.5.1.1 Cartographic Sources

As noted above, seventeenth Down Survey mapping century mapping as well as the Ordnance Survey 1st and 2nd edition maps of the area were examined. No additional sites were noted.

### Place Name Evidence

Arlonstown	Town of the Arlons
Athronan	Ronan's ford
Belpere	Surname, probably Belpere's town
Dunsany	Sany's fort
Kilcarty	Carty's church
Kilmessan	Measan's church
Lambertstown	Town of the Lamberts
Odder	Originally Odra Temrach, Odran of Tara
Ringlestown	Town of the Pringles (?)
Swainstown	Town of the Swains
Tullykane	Kane's hill

The English translations of the townland names of the study presented above are based on Joyce 1979.

The place names refer mainly to families who occupied places and some topographical features, such as fords and hills. The church of Measan is to the west of the development and the church of Carty is outside the study area as is Sany's fort.

#### 3.9.5.1.2 Previous reports

There has been one previous excavation in the study area.

### TULLYKANE

#### Medieval settlement

00E0264 A two-week monitoring programme took place at Tullykane, Kilmessan, Co. Meath, encompassing an area c. 500m east—west by 70-100m. Archaeological features were identified including hearths, ditches, possible house structures and a substantial number of medieval pottery sherds. A preliminary interpretation of medieval rural settlement was reached, and after consultation with the National Monuments Service a full archaeological excavation took place.

The zone of archaeological deposits encompassed an area measuring 125m east—west by 30-55m, c. 150m west of the boundary of soil-stripping, while the northern and southern limits were defined by the extent of soil-stripping and the quarry face respectively. The site was severely truncated by heavy agricultural activity. All archaeological deposits were revealed well down at the base of the topsoil and either directly overlay or were cut into the natural subsoil. The archaeological features were not continuous but could be divided into three distinct concentrations, Areas 1, 2 and 3.

The highest density of activity was concentrated within Area 3, which had maximum dimensions of 55m east—west x 40m. As evidenced elsewhere on the site, this section was partially characterised by singular features having little direct relationship with one another except that they shared the same horizon of activity. This horizon was extremely shallow, averaging 0.2m but varying from 0.05m to 0.5m in thickness. It was primarily defined by the presence of medieval pottery and features such as ditches, gullies, pits, hearths and burnt spreads. The eastern quadrant of Area 3 had two distinct foci of activity (north and south) delineated by shallow ditches that ran west-south-west/east-north-east. There was one deposit that linked the two foci, deliberately laid layer of stone and gravel. It extended for 14m east—west x 12m and partially overlay ditches F28 to the north and F6 to the south. structure 1 (south) was a rectilinear space 5m north—south x 9.5m, enclosed by two foundation trenches with rounded terminals to the east and west and delimited by a ditch to the north. Contained within Structure 1 were several depressions with charcoal-rich deposits, small pits and a series of 26 stake- and post-holes encompassing an area 3.5m east—west x 2m. Immediately west of Structure 1 was an extensive area of mixed dump material with charcoal and bone inclusions.

Area 2 measured 25m east—west x 20m (max.) and encompassed a total of ten features. These included two parallel ditches, which ran north—south for approximately 13m before terminating. They had similar fills and were both sealed by L31, indicating a contemporaneous date of usage. To the south-east was a concentration of activity including depressions and pits with associated burnt material. To the west was a curious curvilinear gully, which seemed to extend to a similar, slightly bifurcated north—south feature (F130). Both had similar dimensions and fills. They did not enclose

a definable area, but a shallow, oval deposit of burnt material was present 1.5m to the west of F130.

Located c. 20m west of Area 2, Area 1 measured c. 30m north—south x 40m. It contained fifteen dispersed features including a probable structure. Structure 2 consisted of linear slot-trenches, several areas of intense in situ burning and three pits within an area that measured 8m north—south x 4.2m. To the east was a north—south gully, which possibly relates to the structural activity.

Although its function is not immediately apparent, it can be suggested that the site had a specific purpose in that it was occupied for a relatively short period of time. It has been truncated by heavy agricultural activity, although the absence of post-medieval/modern inclusions is significant. Of the 4028 sherds recovered, 99.68% were identified as medieval pottery. Almost all were Irish wares, reflecting domestic settlement, and datable to the later 13th century (C. Sandes, pers. comm).

#### County Development Plan

No sites of archaeological importance or National Monuments in the Meath Development Plan 2013-19 are located within the proposed development area.

#### Aerial Photographs

A set of aerial photographs commissioned by Kilsaran and carried out by Marcus Casey in 1999 were examined. These did not indicate any additional archaeological features.

#### National Museum of Ireland

Examination of the topographical files of the National Museum of Ireland for the townlands in the study area revealed that no artefacts from the study have been reported to the Museum. A number of standard artefact corpus studies were also consulted and no other artefacts were identified (Mount 1997, Harbison 1969, Simpson 1990, Eogan 1965, 1983, 2000, Kavanagh 1991, O'Flaherty 1995, Raftery 1984).

#### 3.9.6 Field Assessment

On the 14<sup>th</sup> of October 2016 fieldwork was carried out to identify any additional non-designated structures in the vicinity of the application area. This involved assessing all upstanding Structures that are marked on the 1909 edition of the six inch Ordnance Survey mapping within 100m of the application area (see Fig. 11-1). There are no upstanding structures indicated on the 1909 edition within this area.



**Plate 11-3 (Dr Charles Mount Report)**

**Bing aerial photo showing the application area and the numbered fieldwork areas.**

Area 1 is a west-sloping field of pasture on the south-western side of the application area which is partly overgrown. It is enclosed by a hedgerow to the west and a high berm to the east. There is no indication of any cultural heritage material (Plate 11-4).



**Plate 11-4 (Dr Charles Mount Report)**

**View of area 1 looking north-west.**

Area 2 is a long and narrow undulating area of land on the western side of the application area. The area has been stripped of topsoil to subsoil level and the soil heaped into a berm at west. There is no indication of any cultural heritage material (Plate 11-5).





**Plate 11-5 (Dr Charles Mount Report)**  
**View of area 2 looking north-west.**

Area 3 is the main area of extraction which has been quarried to the level of rock. To the east of this is a triangular area on the eastern edge of the application area which has been stripped of soil to subsoil level. There is no indication of any cultural heritage material (Plates 11-6).



**Plate 11-6 (Dr Charles Mount Report)**  
**View of area 3 the main area of extraction looking west.**

### 3.9.7 Impacts of the proposed Development

#### 3.9.7.1 Direct Impacts

There are no direct impacts on any known items of cultural heritage, archaeology or buildings of heritage interest in the application area or the vicinity

#### 3.9.7.2 Indirect Impacts

There are no indirect impacts on any known items of cultural heritage, archaeology or buildings of heritage interest in the application area or the vicinity

#### 3.9.7.3 Interaction with Other Impacts

No interaction with other any other impact has been identified.

#### 3.9.7.4 Do Nothing Impacts

No do nothing impact has been identified.

#### 3.9.7.5 Worst Case Impact

Development in Area 1, the unstripped area in the south-west part of the application area, might disturb previously unknown deposits or artefacts without preservation by record taking place.



### 3.9.8 Proposed Mitigation Measures

#### 3.9.8.1 Direct Impacts

Due to the possibility of the survival of sub-surface archaeological deposits or finds within Area 1, it is recommended that topsoil stripping within Area 1 be archaeologically monitored.

#### 3.9.8.2 Indirect Impacts

No indirect impacts have been identified and no mitigation measures are required.

#### 3.9.8.3 Residual Impacts

No residual impacts have been identified.

### 3.9.9 References

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## 3.10 Material Assets

### 3.10.1 Introduction

All projects and developments that require an EIS *by virtue of their nature, size and location*, have the potential to have an impact on the environment. This section of the EIS is essentially an overview of the material and amenity resources within the vicinity of the proposed development, coupled with an assessment of the potential impact, if any, of the development on the existing environment in respect of these assets. The section addresses the impacts on the material assets of the site and wider area with respect to the proposed operation of a Waste Recovery Facility (WRF) at the Tullykane quarry site.

The assessment of economic assets tends to be concerned with ensuring their equitable and sustainable use, whereas the assessment of cultural assets tend to be concerned with securing their integrity and continuity, and their necessary context. Key issues of residential development, amenity, land use, roads and utility services are addressed. Natural resources of economic value (Refer to table 3.10.1) which are also considered as material assets, are dealt with where necessary in their respective EIS sections (EPA 2003).

Material Assets is considered to include architectural and archaeological heritage and cultural heritage. For the purpose of this EIS an assessment of the potential impact, if any of the development on the existing environment with respect to these assets is considered in EIS Section 3.9 Section - Cultural Heritage.

EPA (2003) defines material assets as “resources that are valued and that are intrinsic to specific places ..... and may be either human or natural origin, and the value may arise from either economic or cultural reasons”. The Waste Recovery Facility (WRF) use of, or proximity to, the area’s material assets, can directly and indirectly result in potential environmental impacts. Therefore, the objective of this assessment is to identify the material assets of the area, determine the potential impacts of the proposed use of the WRF on these assets, and propose mitigation measures where necessary to ensure that they are addressed in an appropriate manner. This section also indicates the associated sections within the EIS that consider these impacts and any proposed mitigation measures.

### 3.10.2 Study Method

The assessment of material assets has been prepared in accordance with the Advice Notes on Current Practice (in the preparation of Environmental Impact Statements), published by the EPA (2003). Table 3.10.1 outlines the categories of assets, which the EPA suggests may need to be examined as part of the material assets study.

On the basis of categories in Table 3.10.1 and the nature of the proposed development, the material assets which potentially could be impacted by the proposed development, and which have been identified for assessment are: (1) non-renewable resources (minerals, soils); (2) settlement - residential development; (3) land use; (4) transport infrastructure (roads); (5) major utilities; (6) cultural assets - archaeological, historic and architectural heritage; and (7) landscape and natural heritage. Most of these assets have been considered elsewhere within other sections of the EIS, as indicated below:

- Non-renewable resources (minerals, soils) are discussed in Section 3.3 - Soils and Geology
- Settlement and land use are discussed in Section 3.1 – Human Beings
- Transport infrastructure (Roads) is discussed in Section 3.11 - Traffic
- Cultural assets are discussed in Section 3.9 - Cultural Heritage
- Landscape is discussed in Section 3.8 – Landscape

Table 3.10.1 Environmental Protection Agency Classification of Material Assets

Asset Type	
Economic Assets - Natural Origin	<ul style="list-style-type: none"> <li>- Assimilative capacity (air, water)</li> <li>- Non-renewable resources (minerals, soils)</li> <li>- Renewable resources</li> </ul>
Economic Assets - Human Origin	<ul style="list-style-type: none"> <li>- Settlements</li> <li>- Transport infrastructure (roads)</li> <li>- Major utilities (water, sewage, power, telecommunications)</li> <li>- Ownership and access</li> </ul>
Cultural Assets – Physical Type	<ul style="list-style-type: none"> <li>- Archaeology</li> <li>- Architecture</li> <li>- Settlements</li> <li>- Monuments, features and landmarks</li> <li>- Historic sites and structures</li> <li>- Landscape</li> <li>- Geological heritage</li> </ul>
Cultural Assets – Social Type	<ul style="list-style-type: none"> <li>- Language and dialects</li> <li>- Folklore and tradition</li> <li>- Religion and belief</li> <li>- Literary and artistic association</li> </ul>

### 3.10.3 Existing Environment

#### 3.10.3.1 Non-Renewable Resources

The Meath County Development Plan 2013-2017 recognises that there are unparalleled natural resources in the county. The potential of the resources to underpin construction output and provide employment and economic growth in the local and regional economy is also recognised, as is the need to exploit such resources in an environmentally sound and sustainable manner.

Meath has significant resources in terms of aggregates, a resource that had come under pressure due to increased demand prior to the collapse of the construction industry in 2008.

Since aggregates can only be worked where they occur, it is important to identify the location of these resources with a view to safeguarding them, coupled with the protection of amenities, prevention of pollution and the safeguarding of aquifers and ground water.

The area around Tullykane has a history of extraction activities and quarrying. These activities, including the existing quarry, have co-existed with other land uses in the area mainly agriculture. The quarry at Tullykane has provided employment for local people, both directly and indirectly. Kilsaran Concrete have employed up to 20 people and intend in this proposed development to employ five people directly.

### 3.10.3.2 Settlement – Residential Development

There is a concentrated cluster of residents to the west / south west of the site known locally as the Swainestown Cottages. To the east of the site along the Kilmessan-Dunsany road there are a number of one-off single sided dwellings. Approximately 1 km to the west-south west of the site is the village of Kilmessan which has a population of up to 600 people.

The existing Kilmessan Quarry is located in Tullykane, Kilmessan, Co Meath. The area is rural in nature and there is a dispersed mix of single dwelling houses and farms. The site is accessed directly from Local Road L2206 which lies on the southern boundary of the site. The site is generally set within an agrarian landscape and is for the most part bounded by mature trees and hedgerow on all sides. The surrounding landscape features a gently undulating terrain marked by woodland and pastureland. The quarry is substantially screened from views from the adjoining road network. Local Road L2206 connects the villages of Kilmessan and Dunsany.

Approximately 1km northwest of the existing quarry access Local Road L2206 links to L2205 in Kilmessan. These roads principally accommodate local quarry traffic. Local Road L2206 connects to L2207 at Dunsany some 1.75km southeast of the existing site access. To the north the L2207 provides access via Belpers Cross to the R147 (Former N3 National Primary Road) which lies approximately 3.9km north of Dunsany. From the R147 traffic has access to the M3 Motorway at Junction 7 to the north and Junction 6 to the south near Dunshaughlin. Approximately 3km to the south of Dunsany Local Road L2207 connects to the R154 between Batterjohn and Cross Keys.

Adequate fencing, signage and other barriers have been erected around the site for the safety of the general public and to prevent livestock straying into the development area. Large lockable gates are in place to guard against unauthorised and unsupervised entry to the site outside of working hours.

### 3.10.3.3 Land Use

The predominant land use within the application site, which is co-located within the quarry site, is by definition that of quarrying activities related to the extraction of aggregates. The land-use in the area consists of a patchwork of agricultural fields that are designated as pasture and non-irrigated arable land, reflecting medium high intensity agricultural, with relatively low levels of forest cover. The settlement pattern can be described as medium- to low-intensity rural settlement.

The Tullykane (greater Kilmessan area) area is described by Meath County Council (2007) as lying in LCA6: the Central lowlands is described as composed of rolling drumlins interspaced with numerous



large estates and associated parklands. Views within this area are generally limited by complex topography.

LCA6 Central lowlands have the following assigned values:

- Landscape Value: High
- Landscape Sensitivity: Medium
- Landscape Importance: Regional

Also proximate to the proposed development site is designation LCA12 Tara Skryne Hills. This is a landscape comprised of broad rolling hills separated by a mixture of well managed small and large fields which are enclosed by thick hedgerows and mature trees (ash, beech and oak. The Hill of Tara is an area of raised upland to the south of Navan. This is immediately adjacent to the Existing N3 and M3 motorway.

The Tara Skryne Hills have the following assigned values:

- Landscape Value: Exceptional
- Landscape Sensitivity: High
- Landscape Importance: National / International

Meath has <5% forest cover, and the 2006 Corine Map indicates no forest cover in the Tullykane area and wider area (EPA 2014). However, aerial photography shows considerable conifer and broadleaf afforestation and woodland in the Ginnets Great, Rathmoylan and Summerhill areas, whilst native woodland is common on sections of the Trim Esker (Google Maps 2014). Timber production is the principal objective and economic benefit of forestry, although carbon sequestration is a significant environmental benefit of forestry. Forests represent an important renewable resource and contribute to sustainable rural economic development. However, broadleaf woodland and forests are only a minor land use in the wider local area, but together with high, mature banked hedgerows, deep drainage ditches and rolling terrain, contribute to an enclosed pastoral landscape. The site of the proposed development coincides with the quarry site which comprises the entirety of the applicant's landholding (i.e., c. 52ha).

The predominant land use within the proposed development site, which is to be located within the quarry site, is by definition that of quarrying activities related to the extraction of aggregates and the proposed associated operations such as placement of soil and stone in quarry restoration. Ultimately, the site will be reclaimed in accordance with the proposed restoration scheme, and thus undergo a change of land use back to agricultural land. Through the modicum of this proposal it will also see a portion of the site converted to a public amenity park for public use. This will result in a considerable uplift in the social amenity and material asset value of the local area. In the event that a constituted local body does not take up the offer to take over the proposed public amenity park the park will not be developed and the material asset enrichment predicted will not occur. The proposed area will be further integrated into the plans for the main portion of the quarry and returned to agricultural land. Thus, as the WRF is located within the quarry, the proposed continuation of the WRF will result in a change in land use from mineral extraction to agricultural use and potentially a portion of same will result in the creation of a new public amenity with the commensurate uplift in material asset and public amenity value for the area.

### 3.10.3.4 Transport Infrastructure

The existing Kilmessan Quarry is located in Tullykane, Kilmessan, Co Meath. The area is rural in nature and there is a dispersed mix of single dwelling houses and farms. The site is accessed directly from Local Road L2206 which lies on the southern boundary of the site. The site is generally set within an agrarian landscape and is for the most part bounded by mature trees and hedgerow on all sides. The surrounding landscape features a gently undulating terrain marked by woodland and pastureland. The quarry is substantially screened from views from the adjoining road network. Local Road L2206 connects the villages of Kilmessan and Dunsany.

Approximately 1km northwest of the existing quarry access Local Road L2206 links to L2205 in Kilmessan. These roads principally accommodate local quarry traffic. Local Road L2206 connects to L2207 at Dunsany some 1.75km southeast of the existing site access. To the north the L2207 provides access via Belpers Cross to the R147 (Former N3 National Primary Road) which lies approximately 3.9km north of Dunsany. From the R147 traffic has access to the M3 Motorway at Junction 7 to the north and Junction 6 to the south near Dunshaughlin. Approximately 3km to the south of Dunsany Local Road L2207 connects to the R154 between Batterjohn and Cross Keys.

Local Road L2206 in the vicinity of the existing quarry access is subject to the default rural speed limit of 80km/h. The existing access arrangement was upgraded and improved in 2001 under the grant of permission registry reference 99/1230. The boundary fencing and hedgerow are set back from the road edge and accommodate visibility sightlines in the order of 160m in both directions. Based upon previous detailed surveys undertaken in preparing the current Traffic Management Plan in operation at the site and reported upon in the application for the current permission to extract stone at a rate of 750,000t per annum for 20 years the average carriageway width over the length of the L2206 is 6.2m varying from 5.8m to 6.6m. Traffic arising from extractive operations has used this route to and from Kilmessan Quarry since before 1964.

Dublin is the only Gateway within the Greater Dublin Area (GDA), but lies c. 40km to the southeast. Within the north central sector of the GDA, which includes all of Meath and the area around Kilmessan, there are three Primary Development Centres identified, namely Drogheda and Balbriggan on the M1, and Navan on the M3, and the County Town of Meath (DEHLG 2002). These centres are strategically located, dynamic, urban centres on major transport corridors, where development should be concentrated. Navan is the closest Primary Development Centre, being c. 15km north of the site.

The significant roads in the region include:

- M3 is the motorway joining the capital city, Dublin to Navan and Kells, and via the N3 to Cavan and Bellurbet via the N3, and Enniskillen via the A509. It is one of the strategic radial corridors as identified in the National Spatial Strategy (DEHLG 2002).
- M4 is the motorway joining the capital city, Dublin to Maynooth, Mullingar, Longford, Carrick-on-Shannon and Sligo, and via the M5 to Castlebar and Westport, and via the M6 to Athlone, Ballinasloe and Galway. It is one of the strategic radial corridors as identified in the National Spatial Strategy (DEHLG 2002).

- R154 Regional Road is oriented WNW-ESE, and is the Trim to Dublin road, connecting Trim to Kiltale, Cross Keys and Batterstown, and now terminates at the M3 c. 5km north of Clonee.
- R158 Regional Road is oriented NNW-SSE, and is the Trim to Summerhill road, connecting Trim to Summerhill and terminates at Kilcock.
- R156 Regional Road is WNW-ESE oriented, and connects Summerhill to Dunboyne and terminates at the M3 near Clonee.
- R159 Regional Road is oriented N-S, and connects Enfield to Rathmoylan and Trim via a short section (c. 2.5km) of the R158
- R125 Regional Road is NNE-SSW oriented, and connects Kilcock to Dunshaughlin.
- Unnamed local road which services the site is NW-SE oriented, and runs very roughly equidistant between the R154 and R158 regional roads. The road extends for c. 7.5km from the L2204 near Trim to the L2210 near Monalvy.

The Dublin-Galway mainline railway and the royal canal also run E-W and roughly follow the route of the M4 motorway, at least as far as Mullingar, and run along the Meath-Kildare border for c. 45km. The nearby towns of Maynooth, Kilcock and Enfield are serviced by the main line railway service on Iarnrod Eireann's Dublin to Galway line. Dublin is identified as the nearest designated Gateway (DEHLG 2002), and Dublin Airport is the nearest airport at c. 35km due south southeast of the site, whilst Dublin is also the nearest port at c. 40km. Provisions have been made within the considerations of the County Development Plan to have lands zoned in favour of the reconstitution of the Dublin to Navan railway line which is proposed to have a stop off at Kilmessan. This is potentially a significant change to the material asset fabric of the local community and will impact positively on the infrastructural arrangements of the area.

### 3.10.3.5 Major Utilities

The water supply for the existing quarry and the proposed development is provided by the existing mains water supply on site. There is a toilet with septic tank and associated percolation area. The houses in the area are also served by the mains supply and are on the mains sewerage system also.

Power to local residences is provided by overhead lines, which form part of ESB's countrywide, typically low voltage, electricity distribution network. The electrical power to the area is provide from a single HV distribution line operated by ESB Networks, running from Maynooth to Trim, roughly following the route of the R158, and then on to Navan.

The transmission grid in the area of south central Meath consists of three HV lines operated by Eirgrid: (a) 400kV line running from Moneypoint Power Station, Co. Clare to Woodlawn, near Dunshaughlin; (b) 110kV line running from Lanesboro to Dublin; and (c) 220kV line running from Tandragee, Co Armagh (via interconnection to Louth) to Maynooth (See Figure 3.10.1).

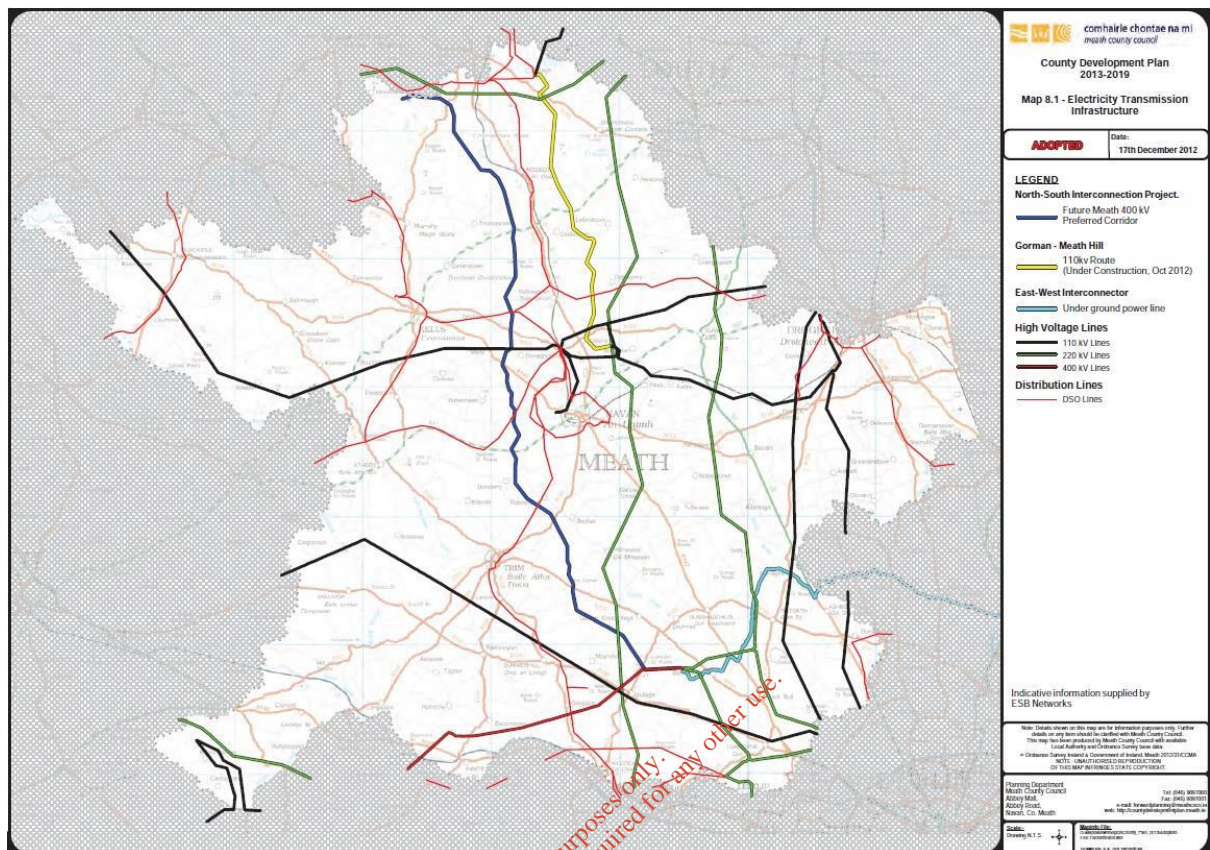


Fig.3.10.1 Electricity Transmission Grid in County Meath. North-South proposed 400kV North-South Interconnector traversing County Meath in vicinity of Tullykane. Redrawn from Meath County Council (2013).

EirGrid, the national electrical transmission operator (TSO) has recently completed development of the 400kV 500MW East-West Interconnector from Deeside, Wales which makes landfall at Rush, County Dublin and runs essentially E-W to Woodland near Dunshaughlin, Co. Meath. This line is thus >10km from Kilmessan. Eirgrid has also rolled out a grid development strategy called GRID25, which governs development of the transmission infrastructure to ensure that grid reinforcements enable connection of significant amounts of renewable energy generation. Eirgrid has planned a second interconnector with the UK, namely the 400kV 500MW North-South Interconnector from Tyrone to Woodland near Dunshaughlin. Eirgrid's preferred route for the interconnector, with overhead lines carried on towers (pylons) up to 43m high, is planned to approach within c. 4km west of Kilmessan.



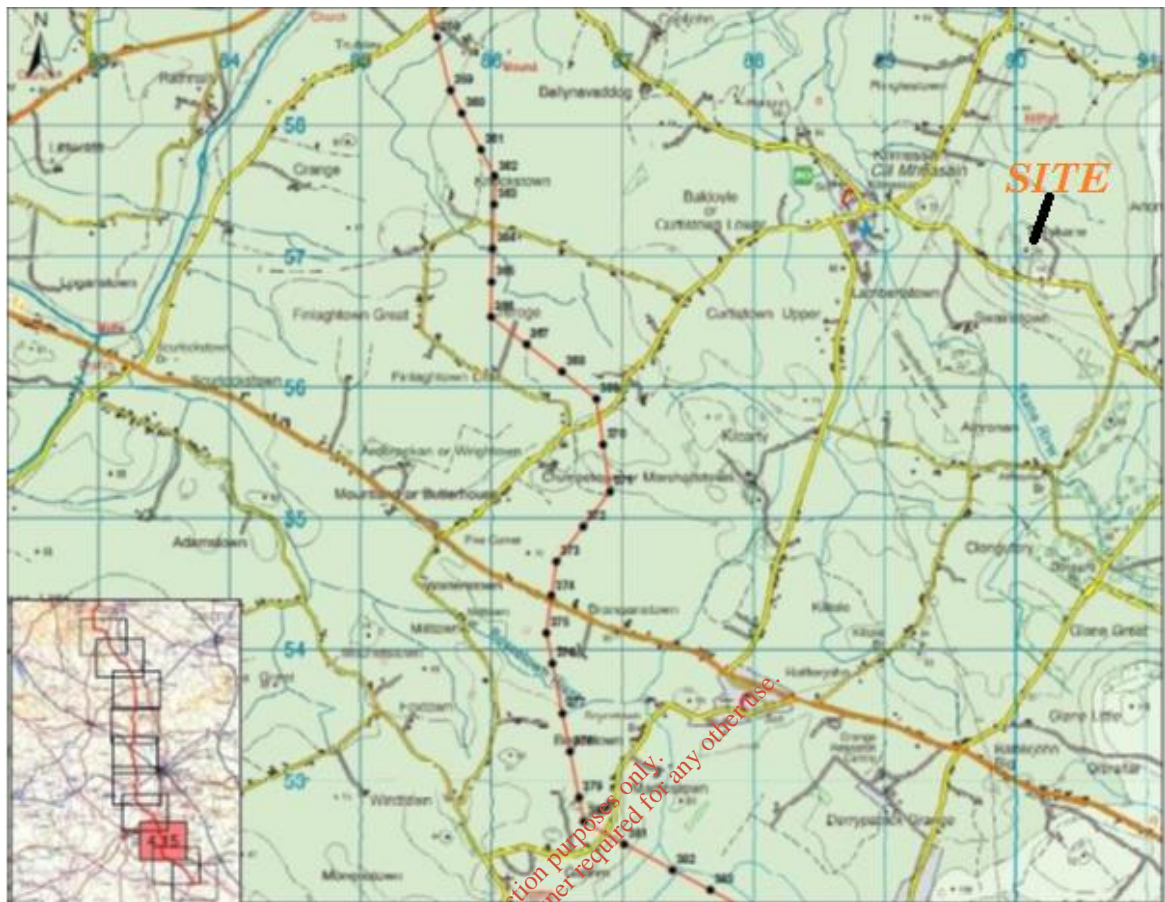


Figure 3.10.2 Eirgrid's Preferred 400kV North-South Interconnector Route. Note the proposed route traverses County Meath in vicinity of Tullykane. Site of Tullykane quarry and Kilmessan marked with X. Redrawn from Eirgrid (2013).

Bord Gais have two subsea gas pipeline interconnectors with Scotland that come ashore near Gormanstown, Co. Meath and Loughshinny, County Dublin. These pipelines connect into the network, which in the east of Ireland consists of a main line running from Cork to Dublin and up the east coast to N. Ireland, with multiple spurs to supply towns on route. One spur supplies nearby Duleek, Navan and Trim, whilst the main E-W pipeline to Galway supplies Ashbourne, Ratoath, Dunshaughlin and Enfield. The latter main E-W pipeline passes c. 2km north of Summerhill, and c. 2.5km south of Foxtown (See Figure 3.10.2). Thus, there are no gas pipelines in the near vicinity of Foxtown (i.e., within c. 2km).

There are numerous mobile masts or base stations for the transmission and reception of mobile telecommunication in the region around Kilmessan. These masts house both point to point microwave links and cellular technologies used in the provision of telecommunication services.



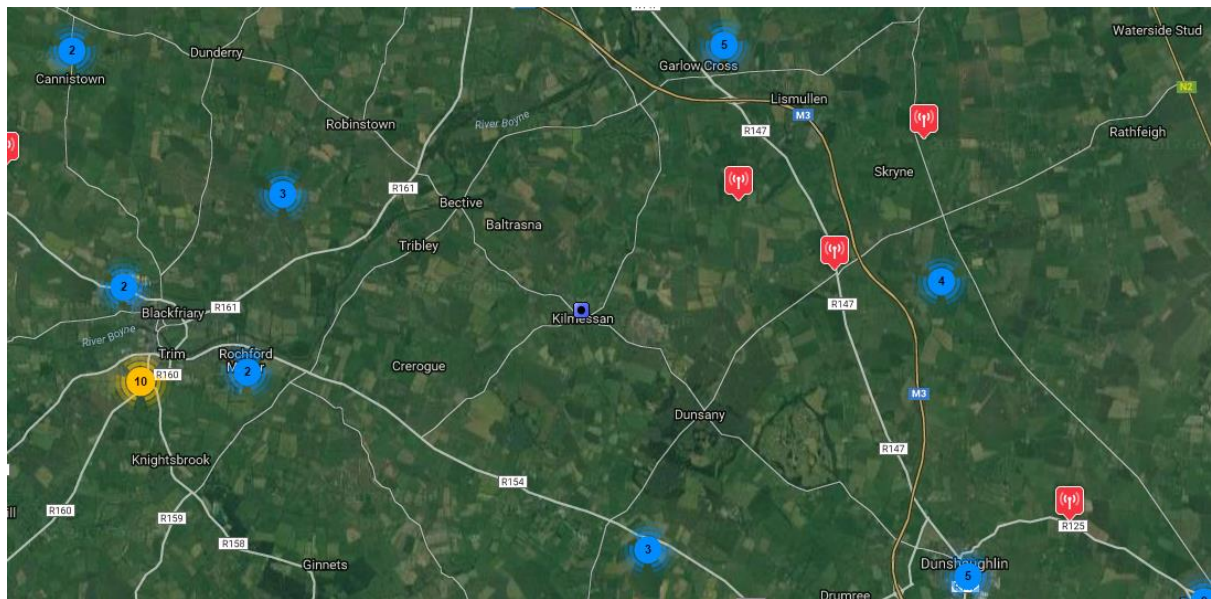


Figure 3.10.3 ComReg Siteviewer 2017 location of phone mast network proximate to Kilmessan Co Meath

### 3.10.3.6 Cultural Assets

The proposed development and the development site was the subject of an assessment that involved the investigation of cultural heritage including the archaeological, structural and historical background of the application area and the surrounding area using a wide range of existing information, as well as a field assessment (Refer to EIS Section 3.9). There are no Recorded Monuments within the proposed development area. There are five Recorded Monuments within the 1km study area. There are no Protected Structures, Architectural Conservation Areas, NIAH structures or NIAH historic gardens or designed landscapes within the proposed development area. As a result there will be no direct or indirect construction impact on the archaeological, architectural or cultural heritage resource.

### 3.10.3.7 Landscape and Natural Heritage

It was demonstrated in previous planning permission that due to the enclosed topography in the immediate area of the quarry, coupled with the existing constructed screening mounds around the extraction area, that Tullykane Quarry cannot be considered to be a large scale visually obtrusive development. It should be noted that quarrying is not specifically mentioned under the Sensitivities. The planning approval for the existing quarry was made before the LCA designation was assigned under this CDP. The quarry under the previous planning permission sought not to extend laterally, but rather in depth within the same footprint so therefore did not become more visually obtrusive.

Tullykane Quarry is a long established development with history of quarrying on the site e. going back over 100 years. A number of existing quarries are located within the areas “designated as exceptional under the Meath Development Plan 2013-2019 for example Mullaghrone Quarry and Donore Shale Quarry. The CDP gives a list of Views and Prospects to be Protected, Tullykane is mentioned in View VP 24 along with the following townlands:- Kilmessan, Swainstown, Dunsany, Killeen, Warrenstown, Clowanstown and Leshemstown. These townlands are all located along the Skane River Valley from Kilmessan to Drumree/Dunshaughlin with the exception of Tullykane, which

is located north of Swainstown. However the local access Kilmessan Dunsany road traverses the entire length of the view or prospect to be protected and does run through the southern part of Tullykane. The views of the quarry from the local road are limited to the southern landscaped and planted screening mounds, including a cut lawn and the stone clad entrance walls. The appearance of the quarry boundary along this section of road does not detract from the landscape quality of the passer by.

The existing quarry is located on the western slopes of an undulating upland area with Tara and Balpere Hills being the highest points (elevation 159m and 143m above Ordnance Datum respectively). To the west the lower lying plane of the River Boyne and tributaries stretches out over many miles. The rich archaeological heritage is nowhere more apparent than at the Hill of Tara, a National Monument, with 360° views of the surrounding country side. Ringlestown Rath, a heavily wooded circular hill fort is a prominent focus of visual attention in the locality. The landforms in the area owe their existence mainly to the bedrock geology and to a lesser extent on the events that occurred at and since the end of the last glacial period. The higher ground at Balpere is underlain by coarse sandstone and shales of the Balrickard Formation, which in turn is underlain by shale, sandstone and limestone of the Donore Formation. These two formation are harder than the older rocks that underlain them so are more resistant to erosion. To the south and west the older underlying Loughshinny Formation comprising dark micrite, calcarenite and shale forms the intermediate zone between the high and the low ground. The Loughshinny Formation is being quarried at Tullykane. The low land then in turn is underlain by the inferior dark limestone and shale of the Lucan Formation. The Lucan Formation underlies extensive swaths of central County Meath, and is covered with a thick layer of glacial till and fluvial deposits associated with the flood plains of the major rivers. A glacial moraine cuts across the broad valley of the Skane River south of Tullykane. The study area has been divided by their landform characteristics on Figure 11.3.

Land cover is primarily focused on land-use and vegetation. Agricultural grazing and tillage are predominant in the area, with mature hedgerow enclosing small to medium fields. There are a number of large demesne in the south of the study area (Swainstown, Dunsany and Killeen) comprising open parkland with mature single and multiple tree stands. A major electrical overhead cables supply line and associated pylons cuts through the landscape of the area to the west of the quarry running in roughly a north to south configuration. The disused Clonsilla to Navan railway line also cuts through the landscape with a number of road bridges still intact. Kilmessan Village which is the largest human settlement within the area is located 1 km to the west of the quarry on lower ground on the flood plain of the River Skane. The M3 motorway is located in the Skryne Valley to the north of Tara and is not part of the immediate study area. The archaeological complex at the Hill of Tara is located 3km northeast of the quarry. The predominant arable agricultural land use has created a system of small to medium sized fields separated by hedgerows. To a lesser extent tillage farming is practiced and has led to hedge clearance associated with larger fields.

The proposed development endeavours to restore the disrupted landscape local to the quarry back to its pre-quarried state of over 100 years ago. From the perspective of landscape and natural heritage it must be stated that the quarrying impacts and the continued quarrying impacts in this regard have been demonstrated to be localised and mitigated by natural and constructed screening from the core significant landscape visual units as identified above. The depth of the quarry and the fact that the operations proposed will continue for some years in the rehabilitation phase infer that there will be no landscape or visual amenity on the surround area until such a time as the quarry level is brought to a level consistent with the surrounding topography.

It is predicted that there will be a short term impact where the final integration of the quarry to an agricultural footing is materialised however this will be insignificant in terms of the final product which will be a “new agricultural Field” which will blend seamlessly into the surrounding landscape. It will be the responsibility of Kilsaran Concrete to ensure that this is carried through to its full and natural conclusion.

#### 3.10.4 References

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## 3.11 Traffic

### 3.11.1 Introduction

#### 3.11.1.1 General

This report provides a comparative assessment of the historic, existing and future traffic generation characteristics of the Kilmessan Quarry site in the context of the prevailing traffic conditions on the local roads network in the vicinity of the existing quarry site at Tullykane, Kilmessan, Co Meath. The assessment compares the traffic scenario arising from the current permitted extractive operations at the site and that likely to arise from the current proposal to backfill the existing quarry void with soil and stone. The traffic assessment is based upon recent 2016 classified turning count surveys of local road traffic flows together with traffic data from 2006 relating to the application for the current permitted development of extractive operations, planning reference TA/802731 (ABP Reference PL17.233813) granted on 23rd December 2011. It is important to read this section of the EIS alongside the Report compiled by traffic experts "Trafficwise – Traffic and Transportation Solutions contained as an Appendix to this document.

#### 3.11.1.2 Study Method

This report provides a review of traffic generation rates for permitted extractive operations. Classified traffic surveys undertaken on the receiving road network identify existing traffic conditions. The traffic surveys were carried out by Abacus Transportation Surveys. In the interest of a comprehensive appraisal of the receiving road traffic environment this report provides an assessment of the traffic flows recorded at the traffic count sites on the roads that make up the haul routes to Kilmessan Quarry.

The report provides an evaluation of the relative level of impact the existing permitted development would have on the local road network if it were operating at the permitted extraction rate of 750,000t per annum as compared to the traffic impact arising from the alternative current proposal to backfill the existing quarry void with soil and stone.

The report identifies how existing and future traffic associated with the permitted development can be accommodated on the existing local road network. Where considered appropriate, measures are discussed regarding the management of traffic associated with the proposed development and local improvements and mitigation measures.

#### 3.11.1.3 Background

##### 3.11.1.3.1 Site Location

The existing Kilmessan Quarry is located in Tullykane, Kilmessan, Co Meath. The area is rural in nature and there is a dispersed mix of single dwelling houses and farms. The site is accessed directly from Local Road L2206 which lies on the southern boundary of the site. The site is generally set

within an agrarian landscape and is for the most part bounded by mature trees and hedgerow on all sides. The surrounding landscape features a gently undulating terrain marked by woodland and pastureland. The quarry is substantially screened from views from the adjoining road network. Local Road L2206 connects the villages of Kilmessan and Dunsany.

Approximately 1km northwest of the existing quarry access Local Road L2206 links to L2205 in Kilmessan. These roads principally accommodate local quarry traffic. Local Road L2206 connects to L2207 at Dunsany some 1.75km southeast of the existing site access. To the north the L2207 provides access via, Belpers Cross to the R147 (Former N3 National Primary Road) which lies approximately 3.9km north of Dunsany. From the R147 traffic has access to the M3 Motorway at Junction 7 to the north and Junction 6 to the south near Dunshaughlin. Approximately 3km to the south of Dunsany Local Road L2207 connects to the R154 between Batterjohn and Cross Keys. Local Road L2206 in the vicinity of the existing quarry access is subject to the default rural speed limit of 80km/h. The existing access arrangement was upgraded and improved in 2001 under the grant of permission registry reference 99/1230. The boundary fencing and hedgerow are set back from the road edge and accommodate visibility sightlines in the order of 160m in both directions. Based upon previous detailed surveys undertaken in preparing the current Traffic Management Plan in operation at the site and reported upon in the application for the current permission to extract stone at a rate of 750,000t per annum for 20 years the average carriageway width over the length of the L2206 is 6.2m varying from 5.8m to 6.6m. Traffic arising from extractive operations has used this route to and from Kilmessan Quarry since before 1964.

The speed limit in the vicinity of Dunsany is 50km/h. Outside of the village the speed limit reverts to the default 80km/h. Local Road L2207 through Dunsany exceeds 6.0m in width. To the north of the village the road remains wide with a dividing solid centreline as far as Knightsfield Park thereafter becoming more rural in character with a reduced average carriageway width measured at 5.8m. To the south of the village the road width is measured to be an average 6.0m in width albeit that there is a localised narrowing of the carriageway to 5.5m at Dunsany Bridge approximately 1km south of the village centre.

#### 3.11.1.3.2 Traffic Management Plan Extractive operation Haul routes

A Traffic Management Plan (TMP) was prepared for the site in 1999 under request from Meath County Council. The primary aims of the TMP are; (1) to minimise the impact from quarry generated traffic, (2) to minimise wear and tear on receiving road network, and (3) to make use of all reasonable transport routes available to haul quarry products to market destination without entailing excessive or extraordinary transportation costs.

The TMP identifies that the three main market areas for aggregates are Dublin, Navan and Trim. The demand for aggregate is market driven and the TMP has been developed around the principle of a flexible network of viable one way haul routes aimed at distributing quarry traffic on the receiving road network.



For the identified main market areas the TMP identifies the following haul routes. For the Dublin Market, Route Option (a) involves outbound vehicles turning left and travel via. L2206 to Dunsany Cross turning left onto L2207, travelling north to the R147 and right to Dublin. Dublin Market Route Option (b) involves turning right at Dunsany Cross and accessing the R154 at Batterjohn turning left to Dublin. For the Navan Market, Route Option (a) involves outbound vehicles turning left and travel via. L2206 to Dunsany Cross turning left onto L2207, north to the R147 and left toward Navan. Navan Market Route Option (b) involves turning right from the quarry access and turning right at Kilmessan (L2206/L2205 T-junction) to travel to Ballinter Cross and on to Navan via. one or other of the two available routes from there.

Navan Market Route Option (c) involves travelling through Kilmessan Village to Bective as far as the R161 and on to Navan. Trim Market Route Option (a) involves travelling through Kilmessan Village to Bective as far as the R161 and on to Trim. Trim Market Option (b) is also through Kilmessan Village to R154 at Pikes Corner and onward to Trim. Although not set out in the TMP Trim Market traffic can alternatively avoid Kilmessan and use the Dunsany Cross route to R154 at Batterjohn.

#### 3.11.1.3.3 Permitted Development

Extractive operations have been carried out at the existing Kilmessan Quarry since before 1964. The most recent planning permission for quarrying is Register Reference TA/802731 (PL17.233813) granted permission on 23rd December 2011, this permission has not yet commenced.

It is understood that Kilsaran intends to recommence quarrying if the current alternative proposal to backfill and restore the quarry is unsuccessful.

Under TA/802731 permission is granted for the extraction of stone at a rate of 750,000t per annum for the term of twenty years whilst a further two years is permitted for final restoration. The permitted hours of operation are 08:00-18:00hrs Monday to Friday and 08:00-14:00hrs on Saturdays. Truck loading activities are permitted to commence at 07:00hrs every day the site is open.

In determining the application An Bord Pleanála considered that, subject to compliance with the conditions set out in the grant of permission the proposed development, including continued operation of this quarry and extraction of rock would not seriously injure the amenities of the area or of property in the vicinity, would not be prejudicial to public health, would be acceptable in terms of traffic safety and convenience of road users, would not be detrimental to the cultural heritage of the general area, and would not materially contravene the policies of the development plan for the area. The Board determined that the permitted development would, therefore, be in accordance with the proper planning and sustainable development of the area.

#### 3.11.1.3.4 Traffic Impact Assessment

The existing site enjoys a planning permission for the continued extraction of 750,000t of stone per annum for a period of 20 years. Kilsaran has given a clear commitment to acting on the current permission and intends to recommence quarrying if the current alternative proposal to backfill and restore the quarry is unsuccessful.

The true measure of impact of development traffic is the incremental difference between the current and proposed traffic scenarios. Given the commitment to recommence quarrying the 'existing' traffic scenario must reflect the permitted extraction of stone from the quarry at a rate of 750,000t per annum for 20 years and a further two years for restoration. The forecast 'future' scenario is that arising from the current proposal to import soil and stone material to backfill and restore the quarry at a rate of 400,000t per annum for the duration of 14 years. Also included in the proposed future scenario is the construction of a community park on lands to the west of the quarry landholding.

### 3.11.2 Existing Conditions

#### 3.11.2.1 Receiving Road Network

##### 3.11.2.1.1 General

The site is accessed directly from Local Road L2206 which lies on the southern boundary of the site. Local Road L2206 connects the villages of Kilmessan and Dunsany. Approximately 1km northwest of the existing quarry access Local Road L2206 links to L2205 and L4010 in Kilmessan. These roads principally accommodate local quarry traffic. Local Road L2206 connects to L2207 at Dunsany, some 1.75km southeast of the existing site access. To the north the L2207 provides access via Belpers Cross to the R147 which lies approximately 3.9km north of Dunsany. Approximately 3km to the south of Dunsany Local Road L2207 connects to the R154 between Batterjohn and Cross Keys.

#### 3.11.2.2 Traffic Surveys

##### 3.11.2.2.1 General

In relation to general roads geometry the principle design parameter is the 'Design Speed' of the receiving road. Other considerations include vehicle categories, the proportions of vehicle types, the volume of traffic on the receiving road and the volume of traffic generated at junctions and accesses.

##### 3.11.2.2.2 Classified Turning Count Surveys

Abacus Transportation Surveys Ltd. carried out classified turning count surveys on the public road network in the vicinity of the site using CCTV on Thursday 29<sup>th</sup> September 2016 and Wednesday 9<sup>th</sup> November 2016 between 07:00 and 19:00hrs. Copies of the CCTV footage can be made available

upon request. The survey data and location mapping is provided in Appendix A of the “Trafficwise” Traffic Impact assessment report in the appendix to this EIS.

The traffic data collected in the surveys is a snapshot of traffic volumes and characteristics on the local road network. The survey days reflect typical weekday traffic patterns and include both schools and commuter peak periods. The weekday commuter peak periods typically tend to have the heaviest hourly network flows.

Classified traffic turning count data was collected for the following junctions:

- Site 1: L2205/L2206 Kilmessan, Priority T-junction,
- Site 2: L2206/L2207 Dunsany Cross, Staggered Crossroad,
- Site 3: L2206/Local Roads (Athronan/Arlonstown), Crossroad

The traffic flow data from the 2016 surveys forms the basis of the assessments of road network capacity and evaluation of the likely impact of the proposed development on the operation of the receiving road network.

### 3.11.2.3 Summary of Traffic Flows on Receiving Roads

Daily traffic flow profiles recorded on the receiving road network during the course of the 2016 surveys are shown in Figures 1 through 20 of Appendix B.

Table 3.11.1 below provides a summary of the recorded traffic survey data and percentage HGV content enumerated between 07:00 and 19:00hrs.

Based upon NRA: Project Appraisal Guidelines, Unit 16.2 - ‘Expansion Factors for Short Period Traffic Counts’ the weekday AADT1 can reasonably be estimated to be approximately 27% higher than the flows recorded during the 12 hour surveys. Table 3.11.1 provides an estimate of AADT based upon 83.1% of daily flows manifest in the traffic survey period. Weekly flow indices of 0.97 and 0.93 have been used for Wednesday and Thursday respectively and monthly flow indices of 0.96 and 1.04 have been used for September and November respectively.

Survey Site Ref.	Road Link	07:00-19:00hrs Two-way Flow		AADT 2016	
		Daily 12hr	HGV	Daily 24hr	HGV
Site 1 Sept 2016	L2205(S) Kilmessan	1,686	54	1,811	3.2%
	L2205(N)	970	47	1,042	4.8%
	L2206 Kilmessan-Dunsany	1,042	51	1,119	4.9%
Site 2 Nov 2016	L2208	969	41	1,176	4.2%
	L2207(N)	1,460	95	1,772	6.5%
	L2207(S)	1,676	95	2,035	5.7%
	L2206 Kilmessan-Dunsany	1,031	37	1,252	3.6%
Site 3 Sept 2016	Local Road Arlonstown	11	0	12	0%
	Local Road Athronan	74	0	80	0%
	L2206(W) Kilmessan-Dunsany	1,026	42	1,102	4.1%
	L2206(E) Kilmessan-Dunsany	1,047	42	1,125	4.0%

**Table 3.11.1 Road Network Daily two-way traffic flows and % HGV (2016)**

A network flow diagram of the recorded daily traffic flows can be found in Appendix C (trafficwise Report) as follows:

- Figure C1 Weekday, Daily Traffic Flows 07:00-19:00hrs

#### 3.11.2.4 Traffic Flows on L2206 Kilmessan to Dunsany Road

Appendix B Figure 1(Trafficwise Report) shows, by direction, the total daily traffic flow passing the existing site access location on Local Road L2206. The average daily traffic flow is 541 vehicles per day westbound (toward Kilmessan) and 501 vehicles per day eastbound (toward Dunsany). Appendix B Figures 1 shows the recorded hourly traffic flow over the course of the 12 hour survey. The profile for the daily flows shows a modest reflection of the tidal commuter traffic pattern typically observed on regional and national roads which tend to show peaks in one direction at the traditional commuting periods in the morning with a reversal in the predominant direction of flow during the evening peak; generally 08:00-09:00hrs and 17:00-18:00hrs respectively. Traffic predominantly flows eastbound in the morning.

The morning peak hour occurs during the traditional commuter peak hour period of 08:00 to 09:00hrs and shows the road to carry 42 vehicles westbound and 78 vehicles eastbound. This

morning peak two-way flow is approximately 1.4 times the recorded weekday average hourly traffic flow between 07:00 and 19:00hrs.

The evening peak hour occurs during the traditional commuter peak hour period of 17:00 to 18:00hrs with 93 vehicles westbound and 32 vehicles eastbound. This evening peak two-way flow is approximately 1.4 times the recorded weekday average hourly traffic flow between 07:00 and 19:00hrs.

Appendix B Figure 2 (Trafficwise Report) shows the daily HGV traffic flow is 29 vehicles per day westbound (toward Kilmessan) and 22 vehicles per day eastbound (toward Dunsany). The profile for the daily HGV flow is not considered typical of the pattern of commercial traffic flows expected on regional and national roads which tend to show a distribution curve resembling the mathematical standard normal distribution. The distribution shows HGV travelling in the morning and evening with a relative lull in the middle of the day.

#### 3.11.2.5 Traffic Flows on L2207 (Between R154 & R147 through Dunsany Cross)

Appendix B Figures 11 and 13 (Trafficwise Report) show by direction, the total daily traffic flow north and south of Dunsany Cross on Local Road L2207. The average daily traffic flow north of the cross is 707 vehicles per day northbound (toward R147) and 753 vehicles per day southbound (toward Dunsany). The average daily traffic flow south of the cross is 830 vehicles per day northbound toward Dunsany and 846 vehicles per day southbound (toward R154). In both cases the profile for the daily flows shows elevated traffic flows in both directions during the traditional commuting periods in the morning and evening peak; generally 08:00-09:00hrs and 17:00-18:00hrs respectively.

The morning peak hour occurs during the traditional commuter peak hour period of 08:00 to 09:00hrs and shows the L2207 to carry 82 vehicles northbound and 98 vehicles southbound to the north of Dunsany. The corresponding flows to the south of Dunsany Cross are 102 vehicles northbound and 115 vehicles southbound. 2.2.5.3 The evening peak hour occurs during the traditional commuter peak hour period of 17:00 to 18:00hrs with 85 vehicles northbound and 83 vehicles southbound to the north of Dunsany Cross and 101 vehicles northbound and 95 southbound to the south of the junction.

Appendix B Figures 12 and 14 (Trafficwise Report) show the daily HGV traffic flow is 46 vehicles per day northbound and 49 vehicles per day southbound to the north of Dunsany Cross with the corresponding flows to the south being 43 HGV northbound and 52 southbound. The profile for the daily HGV flow shows a relatively steady flow in both directions over the course of the survey period 07:00-19:00hrs.

#### 3.11.2.6 Traffic Flows on L2208 Past Killeen Castle

Appendix B Figure 7 (Trafficwise Report) shows, by direction, the total daily traffic flow passing Killeen Castle on Local Road L2208. The average daily traffic flow is 462 vehicles per day eastbound



(toward Dunshaughlin) and 507 vehicles per day westbound (toward Dunsany). The profile for the daily flows shows a tidal commuter traffic pattern with flows predominantly eastbound in the morning with the reversal manifest in the evening peak period.

The morning peak hour occurs during the traditional commuter peak hour period of 08:00 to 09:00hrs and shows the road to carry 92 vehicles eastbound and 38 vehicles westbound. The evening peak hour occurs during the traditional commuter peak hour period of 17:00 to 18:00hrs with 20 vehicles eastbound and 74 vehicles westbound.

Appendix B Figure 8 (Trafficwise Report) shows the daily HGV traffic flow is 20 vehicles per day eastbound (toward Dunshaughlin) and 21 vehicles per day westbound (toward Dunsany). Save for a spike in the data showing 6 HGV travelling westbound in one 15 minute period the profile for the daily HGV flow shows a relatively steady flow in both directions over the course of the survey period 07:00-19:00hrs.

### 3.11.2.7 Traffic Flows on L2205 (Northeast of Kilmessan)

Appendix B Figures 3 and 5 (Trafficwise Report) show by direction, the total daily traffic flow north and south of the T-junction intersection of L2206 and L2205. The average daily traffic flow north of the junction is 479 vehicles per day northbound (toward Navan) and 491 vehicles per day southbound. The average daily traffic flow south of the junction is 817 vehicles per day northbound and 869 vehicles per day southbound (toward Kilmessan), making this section of road the most heavily trafficked locally within the study scope. In both cases the profile for the daily flows shows modestly elevated traffic flows in both directions during the traditional commuting periods in the morning and evening peak periods.

The morning peak hour occurs during the traditional commuter peak hour period of 08:00 to 09:00hrs and shows the L2205 to carry 43 vehicles northbound and 58 vehicles southbound to the north of the junction. The corresponding flows to the south of the L2206 junction are 99 vehicles northbound and 78 vehicles southbound.

The evening peak hour occurs during the traditional commuter peak hour period of 17:00 to 18:00hrs with 66 vehicles northbound and 52 vehicles southbound to the north of the junction and 77 vehicles northbound and 118 southbound to the south of the junction.

Appendix B Figures 4 and 6 show the daily HGV traffic flow is 23 vehicles per day northbound and 24 vehicles per day southbound to the north of the L2206 junction with the corresponding flows to the south being 23 HGV northbound and 31 southbound. The profile for the daily HGV flow shows a relatively steady flow in both directions over the course of the survey period 07:00-19:00hrs.

### 3.11.2.8 Baseline Kilsaran Traffic Generation

At the time of the traffic surveys the Kilmessan Quarry was closed. It is nonetheless the case that the existing site enjoys planning permission to extract stone for 20 years at a rate of 750,000t per annum. It is the clear intention of Kilsaran to commence quarrying operations should the current alternative proposal to backfill and restore the quarry be refused planning permission. The following section is based upon empirically derived traffic generation and vehicle payload data from other operating Kilsaran quarry sites and aims to provide an estimate of the base or existing traffic scenario which is that arising from the current permitted extraction of 750,000t per annum.

Kilsaran is one of Irelands leading suppliers of aggregate to the building industries. In general aggregate is the term used for blasted rock from a quarry that is crushed and screened to produce smaller sized material suitable for further processing within the construction industry such as fills, ready mixed concrete and asphalt. It can range from 150mm single size down to dust.

It can be appreciated that the generation of HGV and indeed the volume of product transported by each vehicle leaving the site is not only product dependent but is commercially driven. The quarry has historically provided aggregates and stone derived products for building and has the potential to continue to do so for 20 years. Product will potentially be delivered to a broad spectrum of construction projects in correspondingly diverse quantities. Product from quarry sites is delivered in the quantity prescribed by the various purchasers and clients. There are projects which by their nature may require many loads and logistical efficiency is typically the objective in those cases. Such efficiency is achieved by ensuring that in the case of multiple loads as many as practicable are full loads. Equally there are smaller deliveries arising from specific demands relating to finite activities on larger sites or simply arising on smaller jobs or works such as house extensions and the like.

A guide to the carrying capacity of the typical HGV used by the quarrying industry to transport aggregates is provided hereunder in Table 3.11.2

Type	Length	Max Weight	Capacity
4 Wheel x 2 Axle Tipper (Five Wheeler)	7.6m	24.5t	14.5t
6 Wheel x 4 Axle Tipper (Six Wheeler)	8.2m	26t	16t
8 Wheel x 4 Axle Tipper (Eight Wheeler)	9.8m	32t	20t
Articulated	14.2m	44t	29t

**Table 3.11.2 Carrying capacity of a typical HGV used by the quarrying industry**

#### *Product Transportation - Aggregates*

Based upon an assessment of weighbridge data for the Ballinclare Quarry in Wicklow the haulage of aggregate from the site does not typically occur all in full loads. The average payload of vehicles

leaving the site with aggregates is 18 tonnes. The maximum and minimum payloads were 32 tonnes and 2 tonnes respectively. The aggregate vehicles in the Kilsaran fleet are predominantly the eight wheeler and articulated types. It can nonetheless be appreciated that third party vehicles also haul materials. As distinct from the average payload the following Table 2.3 shows the typical payload of aggregate vehicles at the Ballinclare Quarry expressed as a proportion of the total number of aggregate carrying vehicles leaving the site. From the figures it can be seen that some 20% of vehicles carrying aggregate leave with less than 15 tonnes whilst a further 26% leave with between 15 and 20 tonnes. Practically half the aggregate loads are less than 20 tonnes with the remaining half being between 20 and 25 tonnes. This is the general profile expected at the existing Kilmessan Quarry upon commencement of extractive operations which will occur should the current application for backfill and site restoration be refused planning permission.

Payload	Proportion of Loads	Cumulative Proportion
0- 5t	11%	11%
5-10t	5%	16%
10 – 15t	4%	20%
15- 20t	26%	46%
20-25t	53%	99%
25-30t	0%	99%
30-35t	1%	100%

**Table 3.11.3 Aggregate Transportation – Recorded Vehicle Payloads**

#### *Import of Materials*

There is no manufacturing of value added products permitted at the existing quarry and only extractive operations and related crushing of stone would be carried out at the site. There is a need for the import of fuels, maintenance vehicles etc. supporting the running of the site and machinery however the volume and frequency of such traffic is not consider significant in the context of the daily HGV traffic generation of the site.

#### *Traffic Generation Potential of Permitted Quarry Development*

Based upon the permitted extraction rate of 750,000t per annum and an average vehicle payload of 18t as derived empirically the site has the permitted potential to generate some 41,667 HGV trips where a trip is defined by a movement to and from the site. Based upon a total of 278 working days and the simple assumption of a flat profile of aggregate production throughout the year it can be estimated that the permitted quarry has the potential to generate an average of 150 HGV trips per day.

The Traffic Impact Report that accompanied the application for the current permitted development acknowledges that quarrying is a demand driven industry and therefore traffic distribution can vary

over time depending upon the market location. Based upon the surveys undertaken at the quarry access at the time of preparing the application for the permitted development some 77% of HGV were observed to arrive from Dunsany and returned in the same direction. Based upon this distribution at the site entrance and the recorded greater network distribution of HGV in the 2016 traffic surveys Appendix C Figure 2 (Trafficwise Report) shows the forecast distribution of quarry generated traffic to the receiving road network. It is assumed for the purposes of the assessment that a workforce of 20 would be employed at the quarry.

In the interest of simplicity it is assumed that the movement of staff vehicles on the network would be in the same proportions as HGV traffic. Appendix C Figure 3 (Trafficwise Report) shows the forecast traffic generation of the permitted quarry development and is the baseline traffic scenario, Table 3.11.4 below provides a summary of the forecast average daily traffic generation arising on the receiving road network from the operation of the permitted quarry development.

Survey Site Ref.	Road Link	AADT 2016		Permitted Quarry Development HGV Traffic (Two-way)	
		Daily 24hr	HGV %	Daily	HGV No.
Access	77% = 231 HGV two-way East 23% = 69 HGV two-way West	340	68%	340	300
Site 1 Sept 2016	L2205(S) Kilmessan	1,811	3.2%	46	41
	L2205(N)	1,042	4.8%	31	28
	L2206 Kilmessan-Dunsany	1,119	4.9%	80	70
Site 2 Nov 2016	L2208	1,176	4.2%	118	104
	L2207(N)	1,772	6.5%	98	86
	L2207(S)	2,035	5.7%	48	42
	L2206 Kilmessan-Dunsany	1,252	3.6%	264	232

**Table 3.11.4 Baseline Traffic Flows and Traffic Generation of Permitted Development**

### 3.11.3 Traffic Characteristics of the Proposed Development

#### 3.11.3.1 Description of the Proposed Operations

The development within the application area is for a period of 14 years and will consist of the cessation in the use of the permitted development and the backfilling of the quarry void with soil and stone under a waste licence from the Environmental Protection Agency. The weighbridges, truck wheelwash bay, floodlighting, oil and fuel storage tanks and water storage tanks the paved entrance avenue and the existing splayed entrance will remain to facilitate the proposed development. In total it is proposed to import 400,000t per annum of material to the site.

#### 3.11.3.2 Hours of Operation

The current grant of permission requires that normal quarry operations (i.e. extraction and processing) shall not commence before 08.00hrs and shall not continue after 18.00hrs Monday - Friday, and 14.00hrs on Saturday. Loading of vehicles shall not take place before 07.00hrs. No work takes place on Sunday or Bank Holidays. The proposed hours of operation are 07.00 am to 18.00hrs Monday - Friday, and 07:00 to 14.00hrs on Saturday.

### 3.11.3.3 Potential Traffic Generation

From weighbridge data it has been shown that the average load per vehicle transporting aggregates is 18t and this figure accounts for partial loads. Based on experience at similar land restoration and landfilling projects typically the proportion of partial loads is lower than the market driven transport of aggregate. It is proposed to import 400,000t of material annually. It is anticipated that the average payload should reasonably be greater than that for aggregate transportation and based upon empirical data and the data in Table 3.11.2 in the interest of a robust assessment it is assumed that the same payload of 20t per vehicle will be manifest at the proposed development site. Based upon a total of 278 working days and the simple assumption of a flat profile of materials import throughout the year it can be estimated that the proposed quarry restoration project has the potential to generate an average of 72 HGV trips per day.

It is expected that the vast majority of wastes will be transported to the site from the east nevertheless it can be appreciated that as per the transport of aggregates the transport of backfill material will similarly be market driven. In the interest of simplicity and to aid in the direct comparison of the permitted and proposed development traffic impacts it is assumed that the proposed development traffic will distribute on the road network in the same proportions as derived for the permitted quarry development. It is also assumed for the purposes of the traffic assessment that a similarly sized workforce of 20 would be employed at the proposed development in the interest of simplicity it is assumed that the movement of staff vehicles on the network would be in the same proportions as HGV traffic.

Appendix C Figure 4 (Trafficwise Report) shows the forecast traffic generation of the proposed quarry backfilling and restoration development and is the forecast future traffic scenario, Table 3.11.4 below provide a summary of the forecast average daily traffic generation arising on the receiving road network from the operation of the proposed development.



Survey Site Ref.	Road Link	AADT 2016		Proposed Quarry Development HGV Traffic (Two-way)	
		Daily 24hr	HGV %	Daily	HGV No.
Access	90% = 110 HGV two-way East 10% = 34 HGV two way West	184	78%	184	144
Site 1 Sept 2016	L2205(S) Kilmessan	1,811	3.2%	25	20
	L2205(N)	1,042	4.8%	16	13
	L2206 Kilmessan-Dunsany	1,119	4.9%	41	33
Site 2 Nov 2016	L2208	1,176	4.2%	63	49
	L2207(N)	1,772	6.5%	53	41
	L2207(S)	2,035	5.7%	26	20
	L2206 Kilmessan-Dunsany	1,252	3.6%	140	110

**Table 3.11.4 Forecast Traffic Generation of Proposed Development**

#### 3.11.4 Public Amenity Park

In parallel with the proposed backfilling and restoration of the existing quarry void it is proposed to develop a community park on a plot to the west of the lands owned by Kilsaran at Tullykane. It is proposed that the park will be constructed at the expense of Kilsaran and the costs offset against community fund contributions. The community park will include for a new dedicated vehicular access to the west (Kilmessan side) of the existing quarry access. Given the current significant setback of the existing quarry site boundary along L2206 the visibility sightlines from the proposed site access are in excess of 160m from a setback of 3.0m which is the visibility standard at the existing permitted quarry development site.

The community park will include paved car parking areas together with a children's play area and paved walkways throughout the park. It is also envisaged that the park will include for a community playing pitch. It is noted that the application incorporates an and/or scenario regarding the park proposal. If a properly constituted body does not come forward to take ownership of the park prior to construction, within a predefined period the area will remain undeveloped and will be reclaimed to an agricultural after-use in keeping with the balance of the reclaimed quarry.

Traffic generation to the proposed park during the working day is expected to be very light. In the evenings it is likely that the site might generate a similar volume of traffic to that of any rural community playing pitch. The traffic using the park will arise from the local community, and it is reasonably assumed that the majority of the trips associated with recreational activities at the site are already being undertaken locally in any case and will for the most part be diverted from other recreational opportunities. The impact of traffic generated by the community park is accordingly likely to be negligible in the context of the operation of the local roads network.



Fig3.11.1 Public Amenity Park

### 3.11.4 Impact upon Receiving Road Network

#### 3.11.4.1 Current Planning Permission and Proposed Development

The proposed development has the potential to significantly reduce the impact of Kilmessan Quarry on the receiving road network. The site is currently permitted to operate at an extraction rate of 750,000t of aggregates per annum for a period of 20 years with a further 2 years permitted for restoration of the site. The average daily HGV traffic generation of the permitted quarry equates to 150 vehicle trips per day. The proposed backfill and quarry restoration project is for a period of 14 years in total and proposes the import of 400,000t of material per annum which equates to an average daily HGV traffic generation of 72 trips and thus constitutes a 52% reduction in the overall potential annual traffic generation of the site. The following Table 3.11.5 shows the existing 2016 AADT against the potential AAT were the permitted development or proposed development

implemented. Over time the AADT on the receiving road network is likely to increase thus reducing the overall percentage impact of the quarry site. The 2016 data is presented as a worst case.

Survey Site Ref.	Road Link	AADT 2016		Permitted Development		Proposed Development	
		Daily 24hr	HGV	Daily	HGV	Daily	HGV
Access	90%=110 HGV two-way East 10%= 34 HGV two way West			340	300	184	144
Site 1 Sept 2016	L2205(S) Kilmessan	1,811	3.2%	1,857	5.3%	1,836	4.2%
	L2205(N)	1,042	4.8%	1,073	7.3%	1,058	6.0%
	L2206 Kilmessan-Dunsany	1,119	4.9%	1,199	10.4%	1,160	7.6%
Site 2 Nov 2016	L2208	1,176	4.2%	1,294	11.9%	1,239	7.9%
	L2207(N)	1,772	6.5%	1,870	10.8%	1,825	8.6%
	L2207(S)	2,035	5.7%	2,083	7.6%	2,061	6.6%
	L2206 Kilmessan-Dunsany	1,252	3.6%	1,516	18.3%	1,392	11.1%

**Table 3.11.5 Forecast AADT Existing Network & Permitted / Proposed Developments**

If considered over the entire life of the project the permitted quarry operating at 750,000t per annum has the potential to generate a total of 833,333 HGV trips not including for the two years of restoration. The total HGV traffic generation of the proposed quarry restoration project is estimated to be approximately 280,000 trips not including for the traffic generated in the construction of the proposed community park. Over their respective lifetimes the proposed development is estimated as likely to reduce the number of HGV on the receiving road network in the order of 66-70%. The existing site standard of access is as granted under previous and current permissions. The applicant continues to maintain the hedgerow either side of the access to ensure that sight distances in both directions are optimised and not blocked by overgrown hedgerow or overhanging branches.

#### 3.11.4.2 Junction Capacity

The existing access is lightly trafficked and will continue to be lightly trafficked in the context of the ultimate capacity of a simple priority junction.

The local roads network intersects with the greater network at the priority junctions located at Kilmessan (L2206/L2205) and at Dunsany (L2206/2207/2208) and these junctions form part of the informal haul route system set out in the current Traffic Management Plan for the quarry. Based upon the recent traffic surveys at both these junction it can be appreciated that they are not heavily subscribed and will have significant capacity to cater for current and future traffic flows to and from the proposed or permitted development at Kilmessan Quarry.

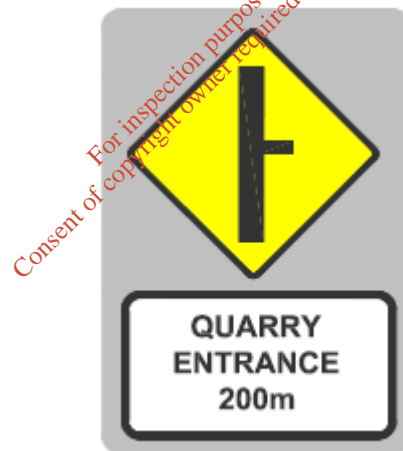
Clearly there are unlikely to be any capacity issues arising at these junctions as a direct result of the proposed development since the proposal benefits the local road network through a reduction in annual average daily traffic flows and operates for a shorter period of time by up to 8 years.

### 3.11.5 Mitigation Measures

At present there is advance warning signing erected on the L2206 on both approaches to the site access and the site access is a prominent feature with stone walls and is accordingly easily identified. Notwithstanding this it is recommended that the existing signs are re-furbished or replaced with new signs of a similar standard of construction (metal). It is not proposed to change the locations of the signs it is however recommended that the signs are augmented with distance plates. The additional plates shall conform to the standard set out in the Traffic Management Guidelines.

It is proposed that new advance signs show a standard junction ahead warning sign which shows drivers which side of the road the entrance is on. It is proposed to augment the sign with an information plate reading 'Quarry Entrance 200m'. If the Planning Authority considers it worthwhile a second set of similar signs can be placed at 100m distance from the site access. The size of the signs and the details of legend size etc. will be designed in accordance with the Traffic Signs Manual.

The following Image Fig. 11.1 provides a suggested layout:



**Fig. 3.11.2 Suggested Signage**

## 3.12 Interaction of the Foregoing

### 3.12.1 Introduction

Schedule 6 of the Planning and Development Regulations 2001 (S.I. 600/2001) sets out the requirement to consider the interrelationships of certain aspects of the environment as part of the EIA process. The requirement arises from the recognition that all environmental factors are inter-related to some extent.

Interactions are usually highly complex, and a change in any one factor, such as land-use or water quality, could affect all of the other interrelated factors. Although almost all environmental aspects are inter-related to some degree only the significant interactions are usually considered in an assessment.

The interactions of the impacts and mitigation measures between one topic and another, where applicable, are discussed under the respective sub-sections within Section 3, rather than in a specific "Interactions" section. Because an EIS is typically prepared by a number of specialist consultants it is important that the interactions between the various disciplines are also considered. This section draws attention to significant interaction and interdependencies in the existing environment.

### 3.12.2 Potential Impacts and Mitigations

In terms of protecting the environment, the impacts of the proposed development at Tullykane, have been assessed and where required, appropriate mitigation measures provided to remedy any significant adverse effects on the environment.

The following matrix has been generated to show where possible interactions may result between the various environmental impacts. For details of any interactions refer to the relevant sections of the EIS.

Section	Human Beings	Flora and fauna	Soils and Geology	Water	Climate	Air Quality	Noise	Landscape	Cultural Heritage	Material Assets	Traffic
Human Beings											
Flora and Fauna											
Soils and Geology											
Water	•	•	•								
Climate											
Air Quality	•	•			•						
Noise	•	•									
Landscape	•	•				•					
Cultural Heritage								•			
Material Assets	•			•		•	•	•	•		
Traffic	•	•				•	•			•	

Table 3.12.1 Interactions Matrix



### 3.12.3 Interactions Discussions

Taking each of the potential interactions and cumulative effects of each potential environmental component the following are representative of the main potential areas for interaction or cumulative effect:

#### 3.12.3.1: Human Beings:

As per the matrix above human beings in the development as proposed have the potential to interact and create cumulative effects in respect of water, air quality, noise, landscape, material assets and traffic. The development can predominantly exert an effect in respect of human beings through the modicum of noise and air quality but interaction can pervade through traffic and vehicular interactions. In this particular proposal the change in relation to the operations is such that noise and air pollution predictions show that no cumulative effects will accrue via the interactions of human beings and those environmental elements. Given that the proposed development is essentially a back filling operation with a commensurate 50% reduction in volumes of materials moved and volumes of traffic generated there is not predicted to be any cumulative effect on human beings.

It may be argued that human beings will invariably be effected now due to the fact that the facility was closed in 2012 and will resume operations again. However the facility was always going to reopen again when the economy picked up. Planning consents are in place for it to do so. This proposal represents a shortening of the planned lifespan of the development and therefore a commensurate reduction in the lifetime emissions generation for the facility. The overall substantive environmental good would ultimately be served by filling in the void and returning it to productive agricultural land.

A positive interaction from the human beings perspective would invariably also be the development or re-manufacturing of productive agricultural land. If left as a void space there would be a biodiversity element to the site as nature would take over and the void pace would be colonised by a rich diversity of species, as is seen in many redundant quarries throughout the count and country alike. That would represent the do nothing scenario and would not really be the product of a cumulative outcome from the interaction of the foregoing. However the cumulative social impact of the proposed development would be the short term continuation of the existing employment at the site, followed by a further number of years of productive employment during the restorative period and consequentially there would be a long term cumulative impact whereby the land will become a productive piece of agricultural ground which will serve the human employment and food chain requirement for many years to come.

It may also be argued that another positive interaction of the forgoing resulting from the cumulative impact of the back filling and restoration plan would be that the landscape and visual impact will be restored to be consistent with the surrounding hinterland again a cumulative impact that could be argued would benefit human beings from a visual perspective.

It would be fair to ask about the cumulative impact of the development and the proposed restorative actions on human beings from a traffic point of view. In short the proposal will result in less traffic movements being generated than are currently being permitted at the site including interactions from residential traffic and other commercial and civilian road users. The traffic impact of such developments are recognised as short term and once, as is the case for this proposal that all relevant road traffic safety precautions and road health and safety design considerations are upheld there will again be no significant cumulative impact.

The cumulative impacts as predicted on human beings from the interactions of the foregoing will culminate in the production of a new material asset. The extraction of the aggregate will have been a demonstration of the utilisation of a material asset to benefit our general human population by providing the raw natural material which facilitates the construction of our homes and commercial and industrial infrastructure. Again the fact that the interactions and cumulative effects have been demonstrated to be relatively low in the development of the very positive material asset which will be a newly restored agricultural entity benefitting human beings for generations to come.

The interaction of the proposed development and the foregoing in respect of the proposed development of the public amenity park will see the delivery of a project for the local community which is borne directly from the spirit of "Local Community Gain". Arguments can be made for the positive that the facility has had on the surrounding area over the past many years and there will be others who will only see the perceived negative impacts i.e. traffic issues, noise, dust, vibration from blasting etc. It is felt by the developer and also could only be reasonably felt that the people closest to the facility, who live beside should gain most from the residual benefits of such a facility. It is in this spirit that Kilsaran Concrete have suggested the development of the Public Amenity Park which will benefit the community greatly. The developer sees this development as giving back specifically to the community who have been supportive of the development throughout the years and it is projects such as these which leave a legacy in the community for many years to come.

### 3.12.3.2: Flora and Fauna:

In terms of the ecological section of the EIS it can be stated 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 development of the public amenity park will have no significant ecological effect except that it may provide a place for the protection and recolonization of the species Rare Plant Species "Blue Fleabane and Bristly Oxtongue" and will invariably provide an opportunity for habitat enrichment through the establishment potentially of biodiverse ecosystems around the walks and trails in the 1.2 kilometres of walking trails proposed.

Dust arisings are a potential interaction between the proposal and the surrounding ecology but again this was viewed as a minor and not extremely significant effect. No significant cumulative effects were predicted either via the interactions with the exception of the possible impacts on sand martin nesting grounds which typically would be in the terrain of disused redundant quarries. However it was noted that this would be a direct effect of the proposal and not a cumulative effect of interactions between any other environmental effects.

### 3.12.3.3: Soils and Geology

In cases where industrial activities interact with soils and geology there are always the possibilities of accidental pollutions or introduced contamination and the generation of cumulative effects of the interaction of the foregoing. An example would be the introduction of contaminated restorative material which would ultimately lead to leachate contamination to the groundwater and the cumulative effect being a bigger more disperse contamination issue than which would have arisen were the material to have been left in its pre-waste state. In the case of this proposed development all materials would be screened via WAC (Waste Acceptance Criteria) analysis and material characterisation procedures or similar prior to being accepted to the site and would be also screened on site in accordance with globally accepted waste acceptance criteria for facilities of this nature. All material more importantly will be inert and non-leaching therefore it is difficult to predict any significant cumulative effect which could arise from the intake of the target material.

There are no predicted cumulative effects on soil and stone from any interaction with any other environmental element.

#### 3.12.3.4 Water

Potentially there are cumulative impacts which could occur in a proposal of this nature between water, flora and fauna and soils and geology. As per the previous sections 2 and 3 above no cumulative impacts have been identified primarily due to the fact that the proposal again will be a dry back filling process using uncontaminated inert materials to fill the void. This coupled with the fact that there are no significant interactions between critical species of flora and fauna and soil and geology and water there are no predicted cumulative impacts for water. It is also notable that the fact that there have been no deleterious transgressions below the water table in the operational/extractive phase decreases the potential hazards that could result in impacts on the water element and also the fact that there are no significantly sensitive surface water elements proximate to the site also reduces the risk of significant cumulative impacts for the proposed development.

#### 3.12.3.5: Climate:

No significant impacts on climate have been predicted to result from the proposed development. Potentially any interactions around air quality will also potentially effect climate on a local or global scale or be seen to cumulatively add to global climatological issues. There are no predicted air emissions issues from traffic volumes associated with the development and given that the volumes of traffic emissions from the proposed development are less than those permitted for the extraction phase of the development, it can be concluded that traffic emissions will not significantly interact with existing on site or other nearby developments to create significant climatological issues.

Management of dust on site to the acceptable environmental norms will also not result in any significant cumulative climatological impact.

#### 3.12.3.6: Air Quality

The matrix above identifies the fact that interactions between air quality impacts can potentially cumulatively impact on humans, Flora and fauna and climate. Section 3.12.3.5 above deals with the cumulative impacts that will arise from the interaction of climate and air quality and as described there are no significant impacts predicted for this development.

Obviously there would be a potential for human interaction to cumulatively impact on air quality relative to this proposal via increased traffic volumes and increased dust generation in particular however with the suggested mitigation measures and best practice through the predicted EPA waste licence conditions and operating parameters, no cumulative effects are predicted in relation to this proposed development.

In the event that air quality was poor and impacts became significant, one of the first direct effects of this would be evident in the local ecology either by the dying off of certain species of flora or by the evacuation of the site by certain fauna. This would represent a potential cumulative impact however as described in section 3.12.3.2 above, no cumulative effects are predicted given the relatively low impact nature of the proposed development.

#### 3.12.3.7: Noise

Noise impacts could invariable generate direct impacts on predominantly human beings but also certain fauna for example bats, rabbits hares or foxes local to the proposed development. The first issues regarding the cumulative impacts of the development is whether the backfilling process will result in a cumulative impact greater than the noise impacts currently experienced from the extraction activities alone. No significant noise impacts at the nearest sensitive areas to the site are predicted. The assessment takes into account the predicted manufactures noise ratings for all plant to be used on site and the cumulative effects of running these plant simultaneously. Again no significant cumulative effect is predicted.

It must also be stressed that a mitigating factor in relation to this discussion must also be that there is not predicted to be any different machinery on site than that which was previously operational there. Therefore no cumulative impact is to be anticipated from the proposed development in respect of on-site processes.

The EIS must also reflect on the cumulative impact from any potential increase in traffic noise on human beings proximate to the site. Again the traffic section of the report reflects a reduction in the permitted traffic volumes and therefore again no cumulative environmental impacts are predicted in relation to this proposed development.

#### 3.12.3.8: Landscape

The Landscape Impact Assessment as carried out concludes that *the proposed development will have a positive impact on the general landscape character within the study area*". Materialistically this conclusion is drawn from the fact that the current extraction process and the proposed backfilling process are both invisible external to the site and that the final outcome from the proposed development will be the creation of a 47.1 hectare tract of newly constituted agricultural land that will blend visually with the surrounding hinterland. Coupled with that there will be the

conversion of 4.34 of the existing 51.44 hectares to a public amenity park, the design of which will be such as to make all efforts to visually improve the landscape.

The interactions of humans and human activity and those of flora and fauna in relation to landscape are recognised in this proposal as being able to cumulatively interact to generate an impact greater than the sum of the individual parts. The cumulative impact in this instance is generally seen as one of a positive nature via the replenishing of the void space to a space which is exactly similar to what it was prior to the extractive process commencing thereby replenishing the local flora and fauna and secondly by restoring the visual amenity for human beings where should they be able to view the landscape from the air the landscape visual amenity as it would be effected to what is regarded as a more visually pleasing aspect.

#### 3.12.3.9: Cultural Heritage:

Due to the extraction process ongoing and with respect to the archaeological insignificance of the existing site as evidenced in section 3.9 of the Environmental Impact Statement it is found that the only cumulative impact from the proposal is that the landscape itself when reconstituted will reflect a continuation of our agricultural and social cultural heritage and permit for a continuance of same. It may then also be argued that the removal of a quarried out landscape serves to deny future generations of the physical evidence of our commercial / industrial cultural heritage and therefore the cumulative impact may be seen as a negative one. The nature of the impact is therefore not deemed to be a tangible impact rather one of perception, very much dependent on that of the human being observing. It can be concluded therefore that no tangible cumulative impact is evident in respect of the proposed development.

#### 3.12.3.10: Material Assets:

Section 3.10 of the EIS and 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. An assessment of the potential cumulative effects of any interaction of any or all of the environmental elements of the proposed developments suggests that there may be impacts where human beings, water, noise, air quality and cultural heritage cumulatively interact to form greater impacts.

It is clear from the EIS that there are impacts from the proposal in relation to the material assets that are the road network, local economic activity, property and local housing. When assessing the potential cumulative impacts however we must assess whether the elements above will interact positively or negatively together in the context of the proposed development. Whilst there is no methodology for calculating the cumulative impact as opposed to the direct impacts it must be stated that where the development has been demonstrated to have negligible direct impacts in respect of the interactions of the foregoing it is therefore hard to conclude how cumulative impacts either negative or positive would arise in respect of the material assets local to the site.

#### 3.12.3.11: Traffic



Traffic Impacts as per all sections preceding will potentially interact with other environmental elements to cumulatively create an impact greater than the sum of the combined parts. In the context of the proposed development these elements have been identified as human beings, flora and fauna, air quality, noise and material assets. Given the fact that the proposed development will result in less traffic than had been permitted for in respect of the original extractive development it is not considered that the impact of the traffic will impact cumulatively on the surrounding environment.

## Appendices:

1. APPENDIX 1 – ECOLOGY REPORT – SCOTT CAWLEY
2. APPENDIX 2 – ECOLOGY AA SCREEN
3. APPENDIX 3 – WATER REPORT – HYDRO INTERNATIONAL
4. APPENDIX 4 – NOISE REPORT - RME ENVIRONMENTAL
5. APPENDIX 5 – LANDSCAPE IMPACT ASSESSMENT – SEAN BOYLE ARCHITECT
6. APPENDIX 6 – CULTURAL HERITAGE REPORT – DR CHARLES MOUNT
7. APPENDIX 7 – TRAFFIC IMPACT ASSESSMENT – TRAFFICWISE
8. APPENDIX 8 – CIF REPORT ON WASTE MANAGEMNT REQUIREMENTS

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