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

Environmental Impact Assessment

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Non-Technical Summary

Rev.	Status	Author	Reviewed By	Approved By	Issue Date
D01	**Draft**	**RME**	**D Smith**	**RME**	**27.01.17**
D02	**Final**	**RME**	**LOD**	**RME**	**27.01.17**
D03					

TABLE OF CONTENTS

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.

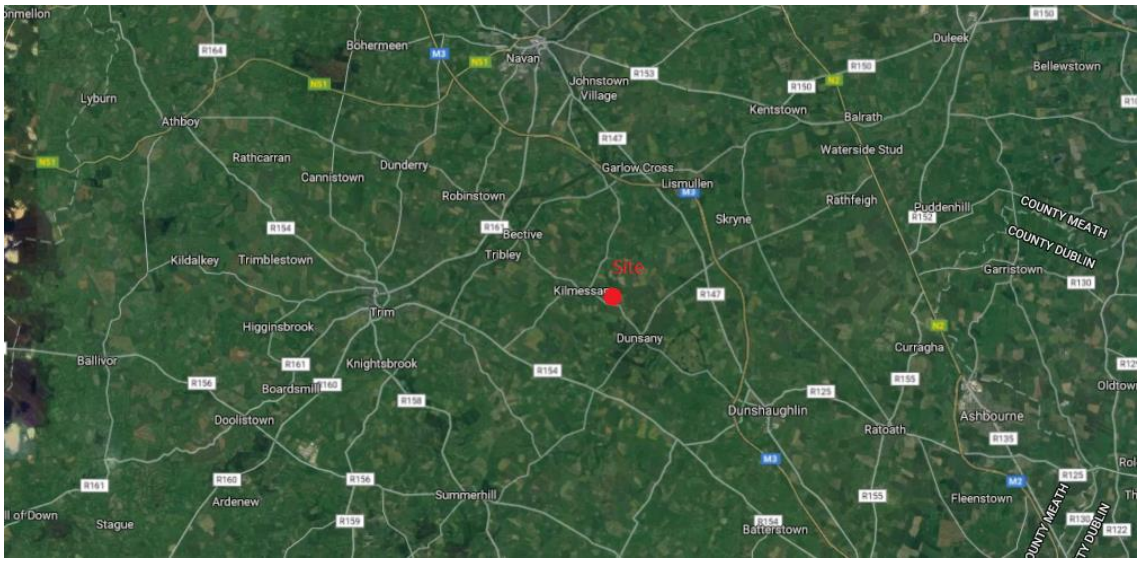


Fig 1.1 Site Location Map

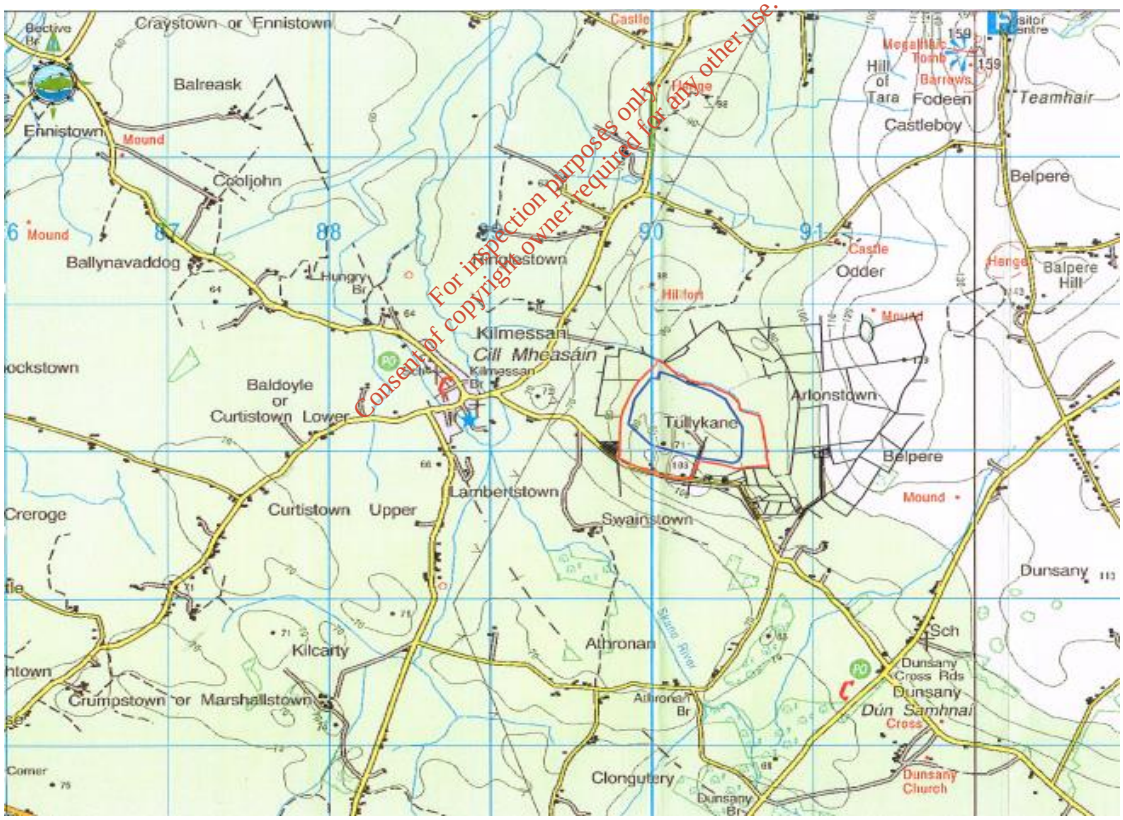


FIG 1.2 SITE LOCATION MAP(ii)

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.

1.2.1 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 Dunsaughin, 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.

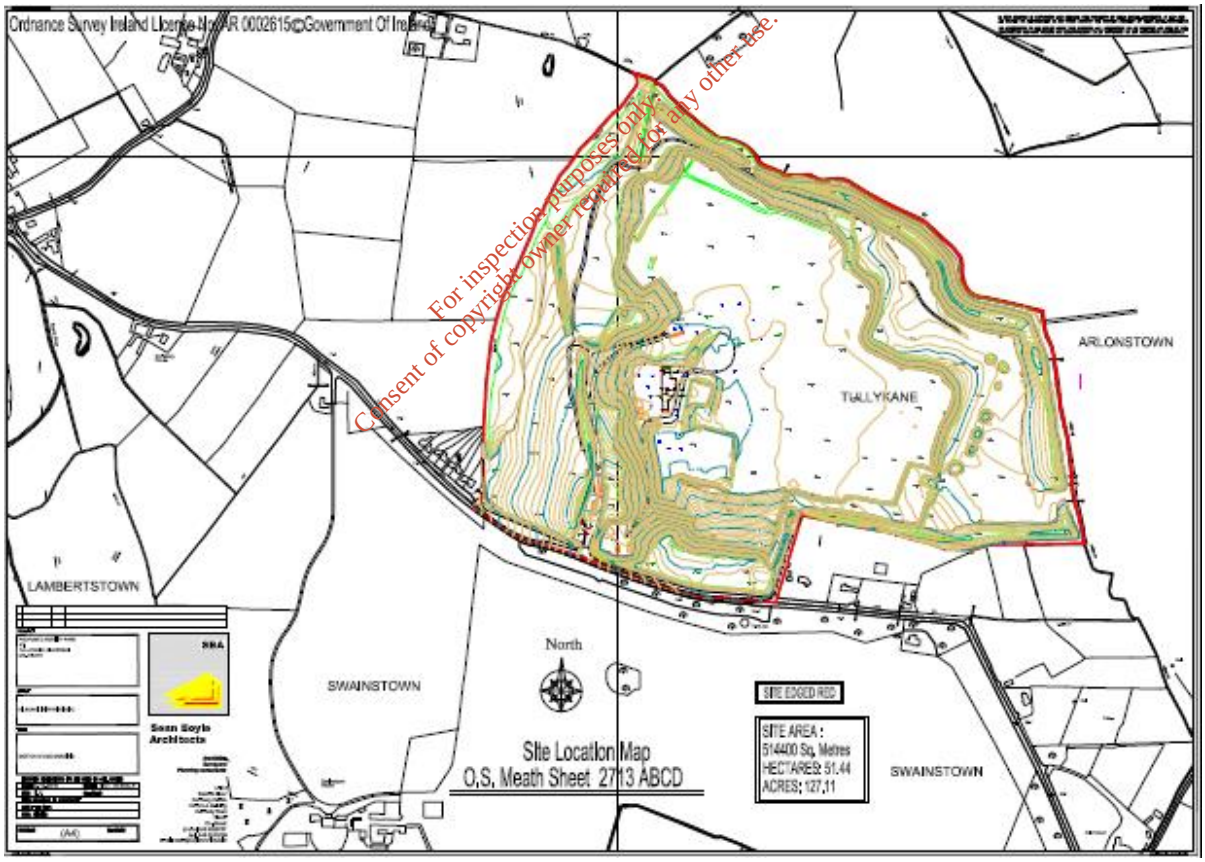


Fig 1.3 Land under the ownership of the applicant

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 Dunsaughlin (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.

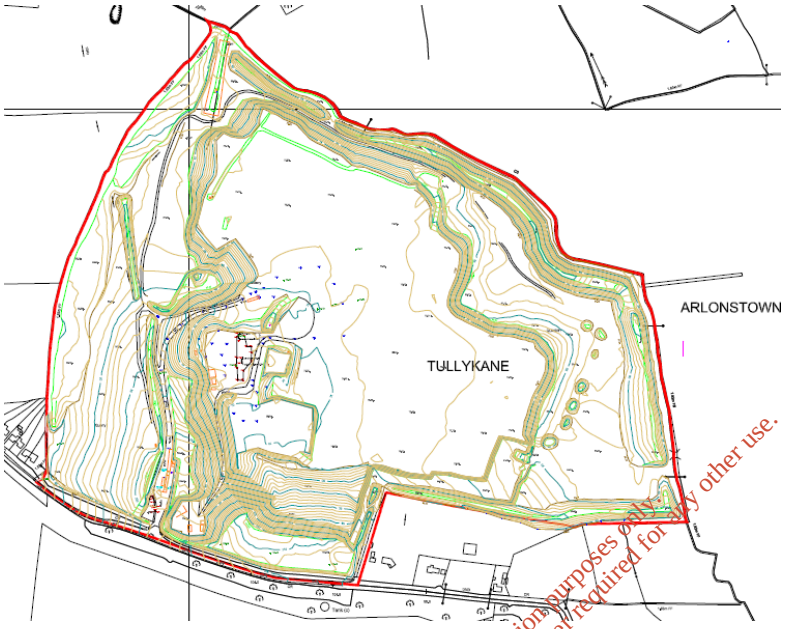


Fig 1.4 Plan Extent of the site and the land ownership of the applicant

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

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 are 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 Federations Environmental Code.

1.5 Planning History

99/1230 – Meath Co Co **Appeal No. PL17.119097**	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 **Granted following appeal 16/10/01 – 10 years permission**
TA/60605 – Meath Co Co **Appeal No. PL 17.22391**	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 **11/05/2007 Split decision Grant**
TA/802731 – Meath Co Co **Appeal No. PL17.233813**	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 **23/12/2011 Conditional Grant – 2o years + 2 for restoration**

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 12th 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 1st with (Tony Curran / Seamus Mc Ateer Kilsaran) and the 2nd 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 17th/11th / 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 eh 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 t 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 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

2.0 DESCRIPTION OF THE DEVELOPMENT

2.1 ALTERNATIVES EXAMINED

The key issue in relation to alternatives examined in this proposed development has been whether the applicant should continue with the process of extraction within the confines of the permitted period which is effectively for another 14 years until 2031, or whether to proceed to expedite the restoration phase of the project. It is widely thought that if the former occur there will be a greater potential for the generation of impacts given that the existing planning permission allows for double the volume of extraction and vehicular movements versus the current proposal. The applicant has stated very clearly their intention to resume the extraction process should this application not be successful.

The EIS has also looked at alternative locations which are not viable due to the very specific site nature and project requirements.

The EIS has assessed alternative sizes for the proposal and alternative rates of backfill. The proposal has been looked at in the context specifically of the regional demand for recovery facilities for the disposal of "Soil and Stone" (Ref: Appendix 8 Main body EIS) and has been very clear that the volume of 400,000T per annum is attainable for the duration of the proposed operational period.

The concept of the "Do Nothing" alternative would lead to the facility automatically defaulting back to the extraction phase which is the phase that has planning permission currently. Kilsaran Concrete have stated that with the economic recovery the resource to be extracted from the quarry has an economic value and this would be the result of that scenario. It would mean that the restoration phase of the project would not occur for a period of 14 years and would be required to be completed two years after that. The resultant end point for the restoration would be very different in that the proposal which has planning permission is to backfill a proportion of the quarry and then flood the quarry by allowing the water table to rise naturally. The current proposal is to convert approximately 46 hectares of the 51.44 ha to productive agricultural land and the remaining 5.4ha approximately will be converted into a public amenity park. Very positive impacts will occur by realising the additional productive agricultural material asset and the social value to be accumulated from the public park. Very positive ecological and visual impacts will accrue from the flooding of the quarry. It is clear from a health and safety perspective that the creation of a lake will bring with it all of the hazard associated with water safety.

2.2 CHARACTERISTICS OF THE PROPOSED PROJECT

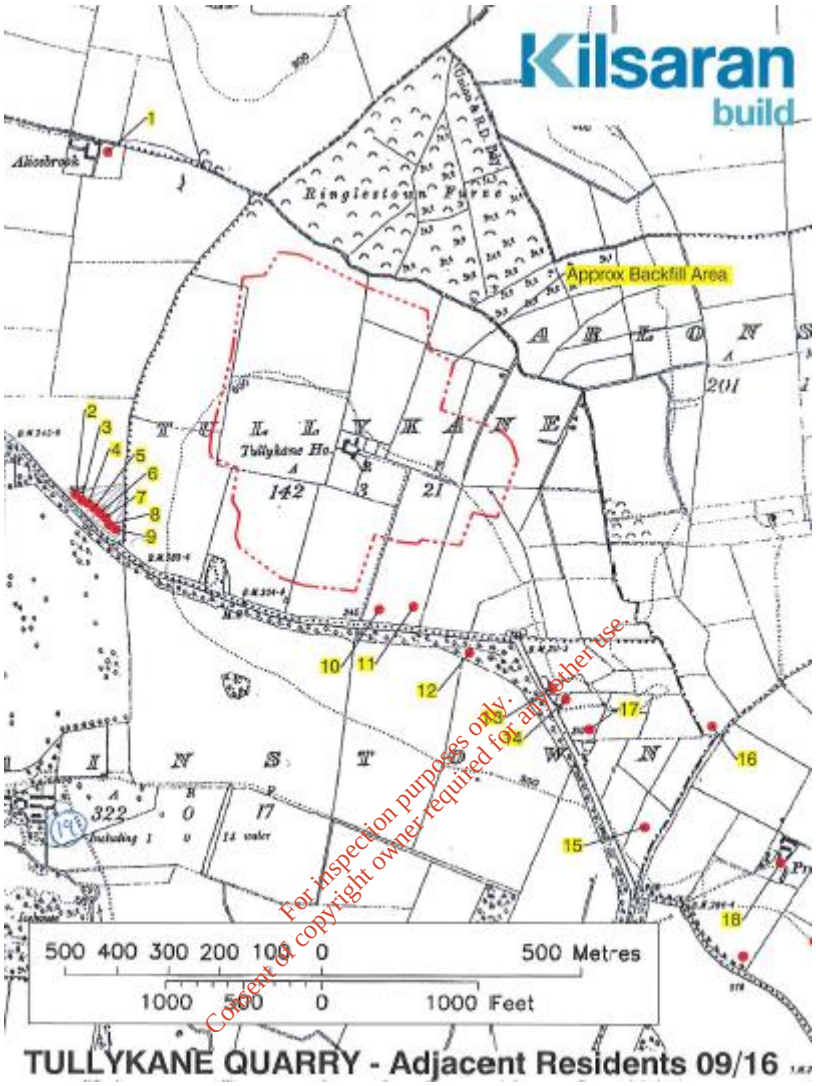
2.2.1 General Description of the Site and its Environs

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) 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^2), 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) 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.wfdirelandie), this applies to both quantitative status and chemical status.

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^3/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.

2.3 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).

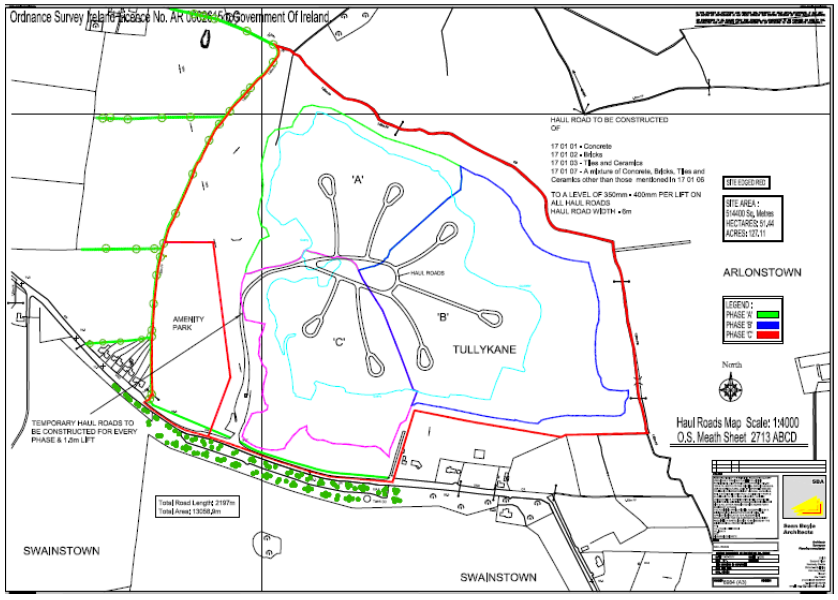
No physical construction needs to take place at the proposed development site. It is ready to commence the backfill of phase "A" immediately. Cognisance must be given however to the construction design plan as it is designed specifically to bring the backfill up in phases which will not create steep 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.

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.

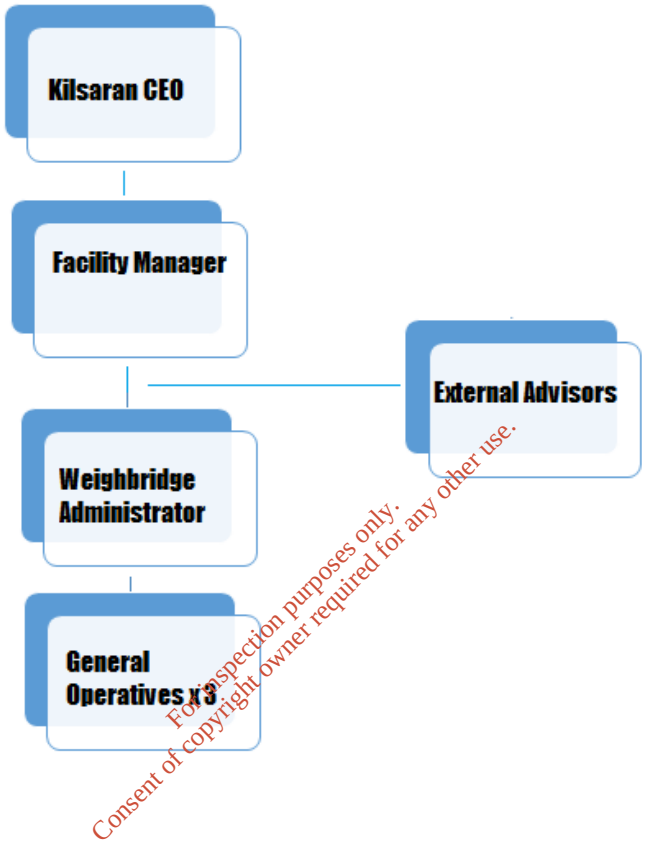
2.4 Description of the Proposed Operations

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.

2.4.1.3 Working Hours

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. loads of material for suitability to tip at the facility.

2.4.2 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.

2.4.2.1 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.

2.4.2.2 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.

2.4.3 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 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.

2.7 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

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).

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.

3.1.2 Impacts of the proposed development

3.1.2.1Land 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.

3.1.2.2 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.

3.1.2.3 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 t 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.

3.1.2.4 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.

3.1.2.5 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.

3.1.2.6 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.

3.1.2.7 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.

3.1.2.8 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 deprived 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 si 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 longer term impacts locally.

3.1.3 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.

3.1.4 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.

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 (EcIA) of the proposed rehabilitation works at Tullykane Quarry.

They assessed and characterised the full site and its associated ecological ecosystems. A full breakdown of these findings are discoverable in section 3.2 of the main EIS documents.

Scott Cawley used the information provided about the proposed project to determine whether there would be any adverse effect on the ecology of the site as a result of the proposed development. They also screened the proposed development for any potential effects it may have on designated European ecological sites (Natura 2000) and presented their findings in a separate report which is attached to the main EIS as appendix 2.

3.2.2 Potential Impacts of the Development

3.2.2.1 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.

3.2.2.3 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 1st March to the 31st 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.

3.2.2.4 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.

3.2.2.5 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.

3.2.3 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.

3.2.3.1 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. 1st March to 31st 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.

3.2.4 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.

3.3 Soils and Geology

3.3.1 Introduction

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.

A full characterisation of the site Soil and Geological classifications is presented in the main EIS. Section 3.3. A summary of the potential impacts and mitigations are listed below:

3.3.2 Assessment of Impacts

3.3.2.1 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.

3.3.2.2 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.

3.3.3.3 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.

3.3.3.4 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.

3.3.4 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 sol 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.

3.4 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. Hydro-Environmental Services (HES) were appointed to carry out the works.

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.

HES assessed and described in great detail the hydrogeological and hydrological extent of the site and its surrounding areas. They also assessed all nearby surface water and

groundwater entities. A full description is provided for the status of all proximate private wells and public water supplies.

Having characterised the status of the site HES then assessed the potential impacts in the context of the proposed development. A full description of the site characterisation and status can be foud in the main EIS. HES also looked at the existing ground water management system and have made recommendations as to how this might be managed through the development / construction phases.

3.4.3 Hydrogeology and Hydrology Impact Assessment

3.4.3.1 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.

3.4.3.2 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 of 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 – **In**direct, 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.

3.4.3.3 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.

3.4.3.4 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 remove 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.

3.4.3.5 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.

3.4.3.6 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.

3.4.3.7 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).

3.4.3.8 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.

3.4.4 Proposed Water Monitoring plan

3.4.4.1 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 A**. The locations of the proposed groundwater monitoring wells are shown on **Figure 8**.

Table A. 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

3.4.4.2 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.

3.5 Climate

3.5.1 Introduction

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.

3.5.2 Direct or Indirect 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 Do Nothing Impacts

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.

3.5.4 Interaction with Other Impacts

The cumulative impact with respect to the operation of the proposed development has also been taken into consideration throughout the preparation of the EIS.

3.5.5 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.

3.6 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

A 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.

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.

3.6.3 Assessment of Impacts

3.6.3.1 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.

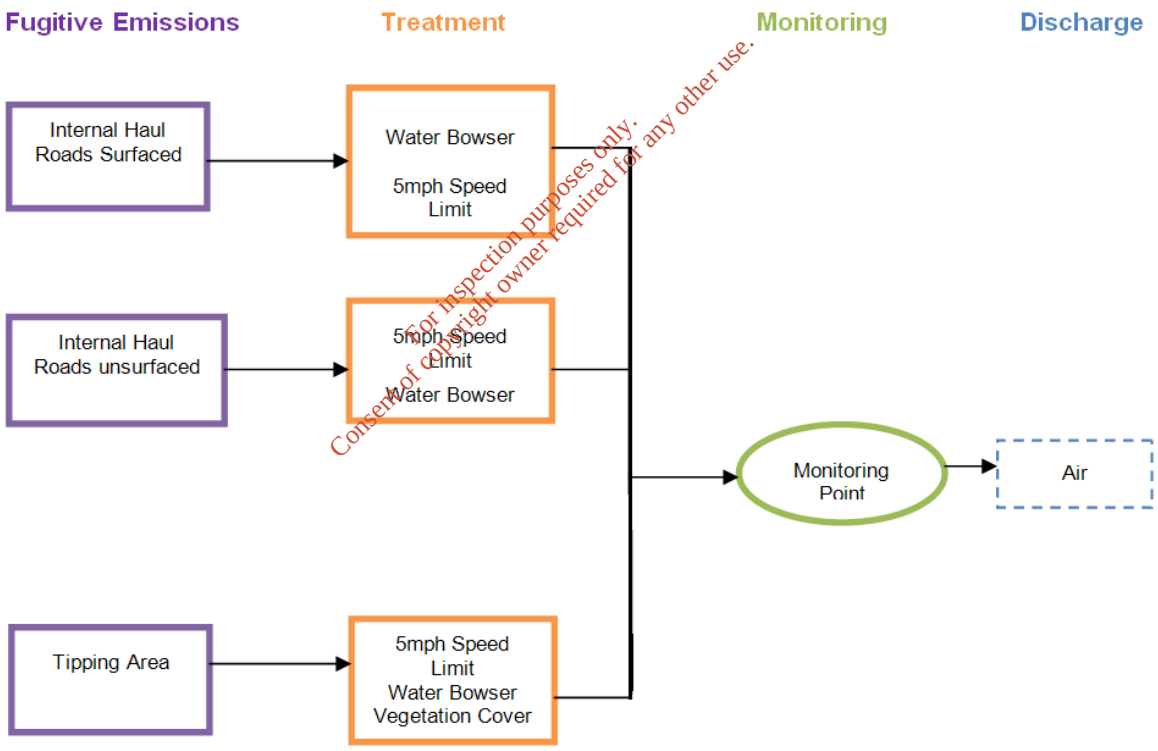


Fig 3.6.1 Operational Activities and potential impacts

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.

3.6.3.2 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.

3.6.3.3 Interaction with other impacts

There are no interactions with other impacts associated with air quality issues.

3.6.3.4 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.

3.6.4 Mitigation and Monitoring

3.6.4.1 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.

3.6.5 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.

3.7 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.

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.

3.7.3 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

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.

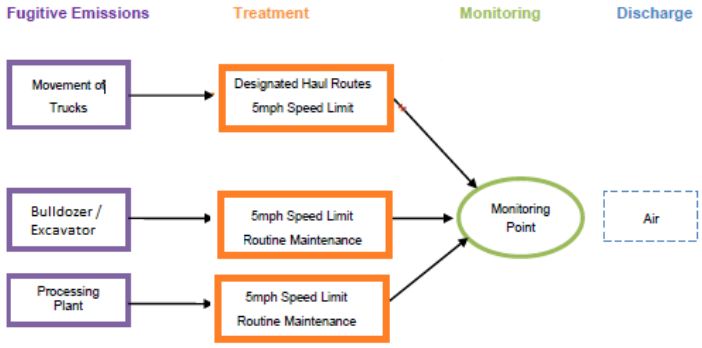


Fig 3.7.1 Noise emission sources and treatment and mitigation measures

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.

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

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.

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.

3.7.4 Mitigation and Monitoring Measures

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.

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.

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.

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.

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;

3.7.4 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.

3.7.5 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.

3.7.6 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 that at the site boundary.

3.7.7 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.

3.8 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.

3.8.2 Landscape and Visual Impacts

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.

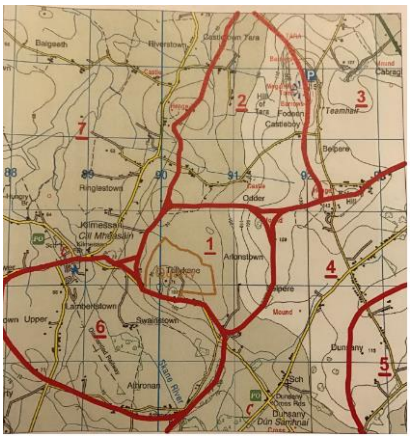
The upper sections of the southern quarry faces and banks are visible from Tara, but only form a small portion of the all-round vista from Tara. The rock being quarried is dark, resulting in unobtrusive features (compared to a white limestone for example). The quarry is not seen against the skyline with 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.

3.8.2.1 Impacts on Landscape/Planning Designations

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 map below. A description of the main limiting factors that affect the extent of views within each unit follows below.



1. This is the visual unit that incorporates the development site; it consists of the entire application area and also the entire landholding of the applicant. The visual unit is demarcated by a series of ridgelines above and below the general elevation of the site. To the south the prominent ridgeline of Swainstown/Tullykane Hill, along which the local county road runs, eliminates any views from the south into the quarry. To the east the ridgeline that connects Belper and Odder, located in open countryside is an effective screen to views from the east. With the exception of the Hill of Tara (which is considered in detail below) views into Unit 1 are screened by the ridgeline between Odder and Ringlestown Rath. Whilst to the west, Kilmessan Village and the area beyond it are at a lower elevation, so no views of the quarry within Unit 1 are afforded. The application lands sits on an elevated plateau enclosed on three sides by ridgelines that are effective visual barriers. The land to the west of the unit falls away to lower ground where no views of the quarry are possible.

2. Unit 2 encompasses the uplands area of the western flanks of the Hill of Tara including parts of Odder, Belpere and Castleboy. The land slopes in a westerly direction from a maximum elevation of 159mAOD at Tara to around 60mAOD in the Screen River valley 3km to the west. Unit 2 is to the north of Unit 1, and the quarry is located 3km to the southwest of the Hill of Tara. Intervisibility between the two units is limited, the upper section of the quarry is visible when standing on the south-western end of the Hill of Tara, whereas the existing quarry floor and working area is not. Existing perimeter screening mounds constructed along the northern boundary of the quarry coupled with intervening vegetation help to limit the visual impact of the quarry on the visual amenity of the Hill of Tara.

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.

3.8.2.2 “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.

3.8.2.3 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.

3.8.2.4 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.

3.9 Cultural Heritage

3.9.1 Introduction

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 proposed 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.

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 field inspection was carried out in October 2016 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.

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.

3.9.2.1 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 Impact Assessments

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

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

No interaction with other any other impact has been identified.

No do nothing impact has been identified.

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.

3.9.4 Proposed Mitigation Measures

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.

No indirect impacts have been identified and no mitigation measures are required.

3.9.5 Residual Impacts

No residual impacts have been identified.

3.10 Material Assets

3.10.1 Introduction

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 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:

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 sited 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 Bellturbet 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

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.

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.

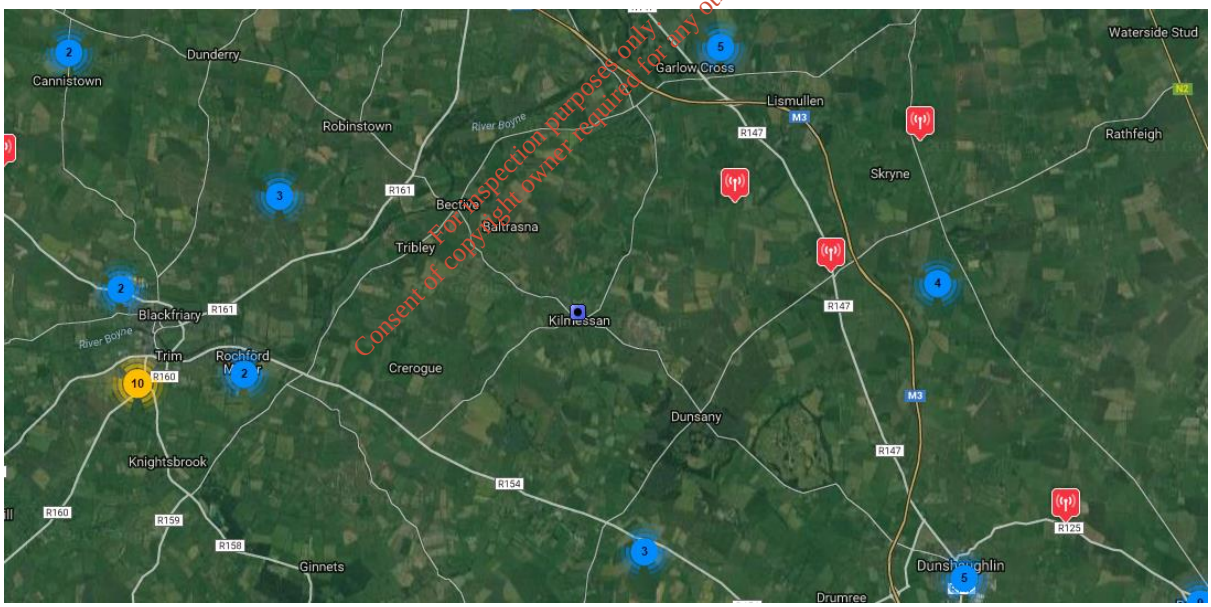


Figure 3.10.3 **ComReg Siteviewer 2017 location of phone mast network proximate to Kilmessan Co Meath**

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 Mullaghtrone 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.

3.11 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 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. 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.

3.11.2 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.

3.11.3 Impact upon Receiving Road Network

3.11.3.1 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: 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 pervious 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.

3.11.3.2 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 deign considerations are upheld there will again be no significant cumulative impact.

The cumulative impacts as predicted on human beings from the interactions of the fore goings 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 is 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 ae 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 eh 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 is 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 off 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.