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5. POPULATION AND HUMAN HEALTH

5.1 Introduction

Human Beings are a very significant element of the “environment” and existing or potential impacts of a development on the status of human health or on the socio-economic status of the population must be comprehensively addressed. The principal concern in this respect is that human beings should experience no significant diminution in any aspect or aspects of “quality of life” as a consequence of the presence of the quarry.

Potential impacts on people that may arise from the proposed development may include, air and noise, traffic and visual impact and these matters are addressed separately in the later sections of this EIAR.

The impact of the proposed development on Population and Human health will be assessed under the following heading in accordance with the requirements the 2014 EIA Directive. They include: -

- Employment
- Settlement Patterns
- Land Use Patterns
- Baseline Population
- Demographic Trends
- Human health (considered with reference to other headings, such as water and air)
- Amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity may be addressed under the factor of Landscape)

Although referred to in this section Human Health is largely dealt with under the other headings of this EIAR including Air, Noise, Water, Material Assets etc.

5.1.1 Statement of Authority

This section of the rEIAR has been prepared by Joe Bonner Town Planning Consultant (B.A. MRUP, MIPI, Die Env Eng, Dip Proj Mgt) who has over 22 years planning experience as both a Local Authority Planning Officer and as a planning consultant. Joe has managed the preparation of many EIS's/EIARs for a range of commercial, retail, and industrial planning applications including several for quarries that have been submitted to Local Authorities throughout the country and An Bord Pleanala for Substitute Consent. Joe is a Corporate Member of the Irish Planning Institute.

5.1.2 Methodology

This assessment has been carried out by way of a desk based study in which the following information sources were consulted: -

- Population and employment reports published on www.cso.ie
- OSI aerial photographs and Maps
- www.epa.ie
- www.tii.ie
- Planning application records available on www.donegalcoco.ie

Following from the desk based study it was possible to consider the spatial location of population in the area and the potential sensitivity of the population and the likely significant impacts of the proposed development on those receptors.

RECEIVING ENVIRONMENT

5.2 Study Area

The proposed development is located in the townland of Trentaghmucklagh, c4km west of St Johnstown and c13km east of Letterkenny. The area is a relatively sparsely populated rural area located in the east of county Donegal, c4km from the border with Northern Ireland.

Sensitive receptors identified by the EPA Guidelines (2002) and EPA Advice Notes (2003) and also in the updated versions of those documents from 2017¹ include: -

- neighbouring landowners,
- homes,
- schools and rehabilitation workshops,
- hospitals,
- hotels and
- holiday accommodation etc.
- commercia buildings

¹ Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU)

5.3 Population

The Central Statistics Office (CSO) is the Government agency responsible for the collection and publication of most Irish official statistics. The CSO disseminates the results of its statistical inquiries in a variety of ways. In this assessment the following CSO based releases and publications were consulted to get both a historic and an up to date picture of the population of the Electoral Districts (ED's) in which the quarry is situated and the two small areas identified in Figure 5.1. The following data has been assessed: -

- Small Area Population Statistics 2002, 2006, 2011 and 2016 (SAPS).

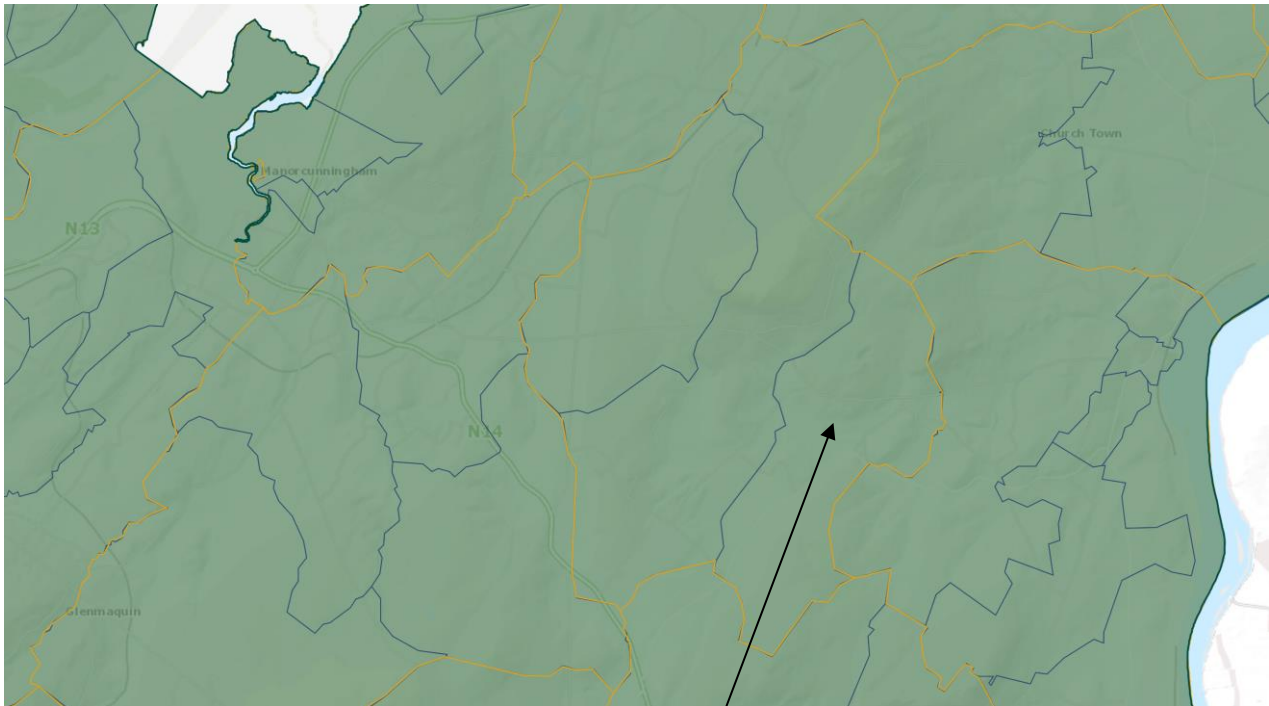


Figure 5.1 Small Area 057145003 within which the quarry sits

www.cso.ie

It is noted that the Small Areas shown in Figure 5.1 correspond to the one of three Small Areas that make up the Trentaghmucklagh Electoral Divisions what is 2039ha. Table 5.1 gives the total population for the Small Area and Electoral Divisions that the quarry is located within.

Over the 10 year period to 2016 the population of the DED increased by 26%, with 20% of that increase coming in the 5 years to 2011, while the growth was more modest from 2011-2016 where it increased by 38 people or 5% at a time when the countywide population fell. The population of the small area fell by 2 persons in the 2011-2016 period suggesting that there was little if any new housing development in the area in that period.

Table 5.1: National, County and Local Population 2002, 2006 and 2011

	2006	2011	2016
Ireland	4,239,848 (+8.11%)	4,588,252 (+7.82%)	4,761,865 (+3.78%)
Donegal	147,264 (+7.03%)	161,137 (+9.41%)	159,192 (-1.22%)
Trentaghmucklagh ED	637	764 (+19.94%)	802 (+4.95%)
Small Area 057145003		212	210 (-0.95%)

5.4 Economic Activity / Employment

The existing quarry currently has 4 full time workers as of June 2022, three of which are family members of the applicant, and represents a reduction from the peak of the mid 2000's when up to 10 people were employed in the quarry. This current workforce is expected to remain constant if the development is granted substitute consent and further permission can be secured to continue quarrying. Indirect employment is also generated in terms of maintenance fitters, fuel delivery personnel and general suppliers of goods and services to the quarry. In time, depending on the nature of work contacts received, there may be scope for the direct employment of additional personnel.

The principal economic activity in the surrounding area of the site is agriculture and forestry apart from the quarry and the adjacent quarry to the east. This comprises mixed grazing by cattle and sheep. There are no major commercial or tourist developments in the environs of the quarry.

The County Development Plan which was published in 2018 notes that: -

The traditional activities of farming, tourism and forestry still have and will continue to have an important role to play in the rural economy of the County. Of the total area of the County, approximately 39% is in agricultural use, although much of it is unsuitable for commercially intensive farming. The County has a relatively high area of forest cover, approximately 11%, and almost 40% of which is privately owned

Chapter 8.1.1 of the Development Plan states: -

Donegal has a strong tradition of using local stone as a road, paving and house building material. The contemporary use of local stone in construction can be encouraging, as it reflects the labours and traditions of previous generations and its use is less visually obtrusive within the Donegal landscape.

Aggregates are a significant and necessary natural resource for the continued economic development of Donegal including job creation and are essential materials for building as well as essential components of infrastructure projects. Therefore, there is a need to facilitate the sustainable extraction of appropriate materials such as clays, gravels, sands and aggregates with due regard for its social and environmental impact. The Council recognises the need to minimise any adverse impacts upon the natural environment, landscape, road network, heritage and communities. Impacts which must be taken into consideration include the following; noise, vibration, dust, water quality, lowering of the water table, natural and cultural heritage, landscape, traffic and waste materials. The Council acknowledge the availability of Aggregate Potential Mapping prepared by the Geological Survey of Ireland to assist in the identification of sites with mineral/aggregate extractive potential.

The 2011 census indicated that of 487 person aged over the age of 15 (64% of the total population of the Trentaghmucklagh ED), that 264 (54.2%) were at work, 5 (1.02%) were looking for their first regular job, 30 persons (6.16%) were unemployed and 35 (7.19%) were students. 85 (17.46%) persons were looking after the family home, 40 (8.21%) were retired and 28 (5.76%) were deemed unable to work.

The percentage of the total population of the small area who were working in April 2016 stood at 47.62%, compared to 44.76% in the Trentaghmucklagh ED. Nine people in the Small Area were engaged as Process, plant and machine operatives, with a total of 27 residents of the ED engaged in this type of work that the quarry would, fall under. Tinney's quarry and the adjacent quarry would account for some of those employees.

Table 5.2 Persons at work by industry in small area in Census 2016

Persons at work by industry	Small Area Employment Census 2016	Trentaghmucklagh ED Census 2016
Industry	Number	
Managers, directors and senior officials	3	15
Professional	7	42
Associate professional and technical	8	29
Administrative and secretarial	8	30
Skilled trades	22	81
Caring, leisure and other service	8	38
Sales and customer service	8	31
Process, plant and machine operatives	9	27
Elementary Occupations	4	27
Not Stated	23	39
Total	100	359

5.5 Settlement Patterns

The previous sections have addressed the population and employment statistics for the area. This section will address the local settlement pattern, which consists entirely of one off-housing. The Census Small Area Population Statistics indicated that all 74 occupied houses on Census night 2011 in the Small Areas that the quarry lies within, were one off bungalows/houses. There are no housing estates in the area.

In census 2016 the number of occupied dwellings was 74, with 1 temporarily unoccupied while there were 17 other vacant houses, giving a total of 92 houses, The density of housing is 0.045 houses per hectare or one house per 22.16 hectares, which is extremely low.

There is no formal pattern of development in the area and houses are located along the local roadsides as is typical of rural housing. Figure 5.2 shows other houses in the area that are outside of the ownership of the applicant while Figure 5.3, which is also included as Appendix 5.1, shows that there are 25 occupied houses located within 1km of the existing and proposed quarry boundaries.

The Census Small Area Population Statistics (SAPS) indicated that 74 (80.43%) out of 92 houses within Small Area 057145003, were occupied houses on Census night 2016, while one was temporarily absent. This level of vacancy (19.57%) suggests is lower rate of empty properties than in the county as a whole.

Area	Total Housing	Occupied	Vacant	Temporarily Vacant
Donegal	83,931	58,964 (70.25%)	22,992 (27.40%)	1971 (2.35%)
Stranorlar Local Electoral Area	11,202	9,329 (83.28%)	1,618 (14.44%)	255 (2.28%)
Stranorlar ED	2,127	1,693 (79.60%)	371 (17.44%)	63 (2.96%)
Small Area 057145003	92	74 (80.43%)	17 (18.48%)	1 (1.09%)

The housing stock of small area '157145003' represents just 0.11% of the total housing stock of the county, while it contains 0.13% of the population of the County and has an occupancy level of 2.67 persons per occupied unit in the Stranorlar ED and 2.83 within the 'Small Area' (excluding unoccupied houses) compared to 2.70 per unit in the County.



Image 5.2 Occupied Houses within 500m of perimeter of existing and proposed quarry

5.6 Land Use

As per the Corine land survey carried out by the EPA on behalf of the European Environmental Agency in 2018, the land uses within 500m of the quarry include the adjacent quarry to the east, houses and agricultural land as well as forestry to the northwest and the land uses are described as follows and shown in figure 5.3.

- Forest and semi-natural areas – Forest; (code 312 dark green in figure 5.3)
- Forest and semi-natural areas - Scrub and/or herbaceous vegetation associations (code 322) (light green)
- Agricultural Areas – Pastures (Code 231) (light yellow)
- Agricultural Areas- Heterogeneous agricultural areas (code 242)(dark yellow)

The quarry area is described as 'Agricultural Areas – Pastures' (Code 231) (light yellow).

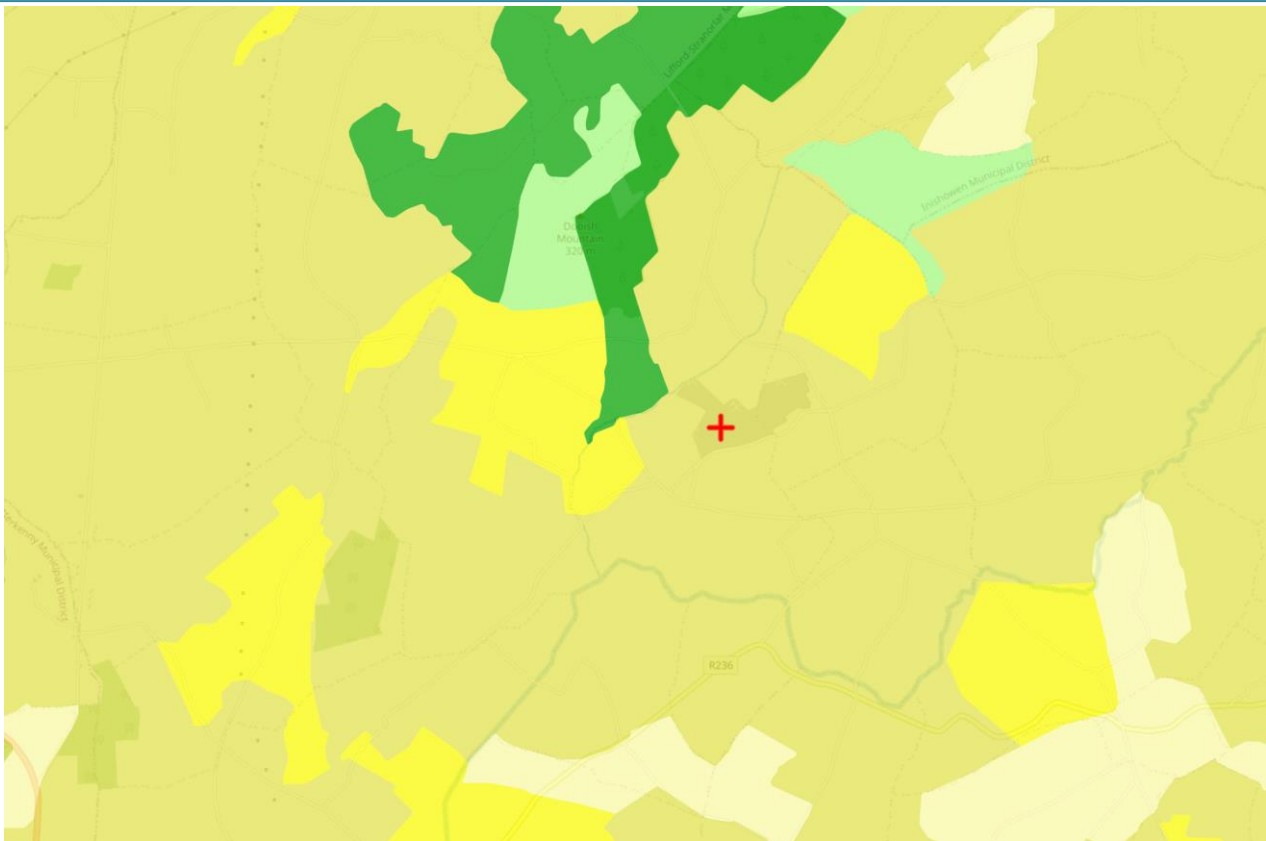


Figure 5.4

Extract from Corine Land Use Map 2018

www.epa.ie

The nature of land cover and vegetation are discussed in more detail in Section 4 – Biodiversity, section 7 – Land and Soils and section 8 – Water.

5.7 Planning Permissions

21 houses are recorded within 500m of the quarry as per image figure 5.2 above while Table 5.4 below indicates that permission has been granted for 10 houses within c1km of the quarry since 2011, with permission refused for 4 houses on a single family landholding because of the format of the proposed development adjacent to each other in a prominent location. The nearest house remains c120 to the south west of the quarry. Permission was also granted for a number of domestic extensions and for agricultural structures.

Table 5.4 provides a review of all planning applications within 1km of the centre of the quarry. These applications are available on the online planning register at www.donegalcoco.ie and the earliest application is from 1998, 24 years ago.

Each application has a reference which can be reference to the same number on Figure 5.5 below while it also contains the planning reference number, a description of the development, the applicants name and the decision issued by Donegal County Council. None of the applications were appealed to An Bord Pleanala.

Table 5.4 Planning History within 1km of centre of existing Quarry

	Planning Ref	Application Type	Description of Development	Applicant	Decision
1	14/50	Retention	A machinery storage shed and 4no. container storage units at existing quarry	Paul Doherty	Incomplete
2	16/50606	Permission	construction of extensions to the side and rear of existing dwelling house, works include amendments and refurbishment works to existing dwelling and all associated site work	Melissa Gibson	Granted 22/07/16
3	20/50940	Permission	Construction of a dwelling house and septic tank with percolation area and all associated site works	Vincent and Katherine McMorrow	Granted 06/01/2021
4	11/60014	Retention	dwelling house, domestic garage, septic tank and percolation area and also for the relocation and realignment of part of driveway	Sean Healy & Odette Clarke	Withdrawn 21/03/2012
5	21/52148	Retention	(1) domestic garage located at the rear of dwelling (2) entrance and driveway	Shane McAteer	Part grant part refusal 06/07/2022
6	13/50422	Permission	Construction of a dwelling house, domestic garage, septic tank/sewage treatment system and associated site development works	John Arthur	Granted 19/08/2013
7	13/50423	Permission	Construction of a dwelling house, domestic garage, septic tank/ sewage treatment system and associated site development works	Andrew Arthur	Granted 19/08/2013
8	12/60080	Permission	Construction of a dwelling house, sewage treatment system and associated site works	John Arthur	Withdrawn 08/06/2012
9	18/50040	Permission	Construction of a cattle underpass across the I-1264-4 public road and all associated site works	Samuel William John Tinney	Granted 06/09/2018
10	10/60267	Extension of Duration	construction of 2 no 2 storey domestic dwellings (04/6784)	FF Radon Systems Ltd Con & Karol Tinney	Granted till 11/12/2015
11	15/50763	Permission	construction of a slatted shed, effluent tank and cattle/sheep crush and associated facilities	Ivor Wilson	Granted 16/10/2015
12	21/51020	Outline Permission	construction of a detached dwelling house with domestic garage, wastewater treatment system and siteworks to include new access lane with associated regrading to provide suitable level	Melissa McClintock	Refused 15/07/2021
	21/51024	Outline Permission		Jason McClintock	Refused 15/07/2021
	21/51025	Outline Permission		Gemma McClintock	Refused 15/07/2021
12	22/50769	Outline Permission	Construction of a dwelling house, domestic garage with connection to proposed treatment system and percolation area	Melissa McClintock	Refused 23/06/2022

13	11/60134	Permission	construction of an extension to existing dwelling house and a new percolation area to service the existing septic tank and all associated site works	Des Goyvaerts	Granted 03/10/2011
14	13/50085	Permission	construction of an agricultural shed for meal storage and machinery storage with associated site works	Robert McCracken	Granted 18/04/2013
15	16/51386	Permission	Construction of an agricultural livestock slatted shed with underground effluent storage tank and all associated siteworks	Shane McClintock	Granted 13/01/2017
	20/50537	Retention	Domestic garage with carport ancillary to dwelling house	Amanda McClintock Wilson	Granted 12/08/2020
16	11/60260	Permission	Construction of a two storey dwelling with detached garage and wastewater treatment system	David Wilson	Granted 16/04/2012
17	22/50215	Permission	Erection of an agricultural slatted cow shed with underground effluent storage tanks, and all associated site works within farm complex	William Graham	Granted 05/05/2022
18	20/51817	Permission	Construction of a detached domestic garage and associated site development works	Simon & Claire McMenamin	Granted 03/03/2021
19	19/50999	Retention	(1) domestic garage to rear of dwelling house, (2) vehicular entrance to service dwelling house & boundary wall along county road, (3) alterations to front facade of dwelling house to include for extra window and extra chimney	Martin & Linda Duggan	Granted 18/09/2019
20	11/60117	Extension of Duration	Construction of dwelling house, septic house & percolation area 06/40349	Thomas Duggan	Granted 01/07/2011
21	20/51783	Permission	Construction of a dwelling house with connection to proposed septic tank and percolation area	Don & Rachel Hegarty	Granted 22/03/2021

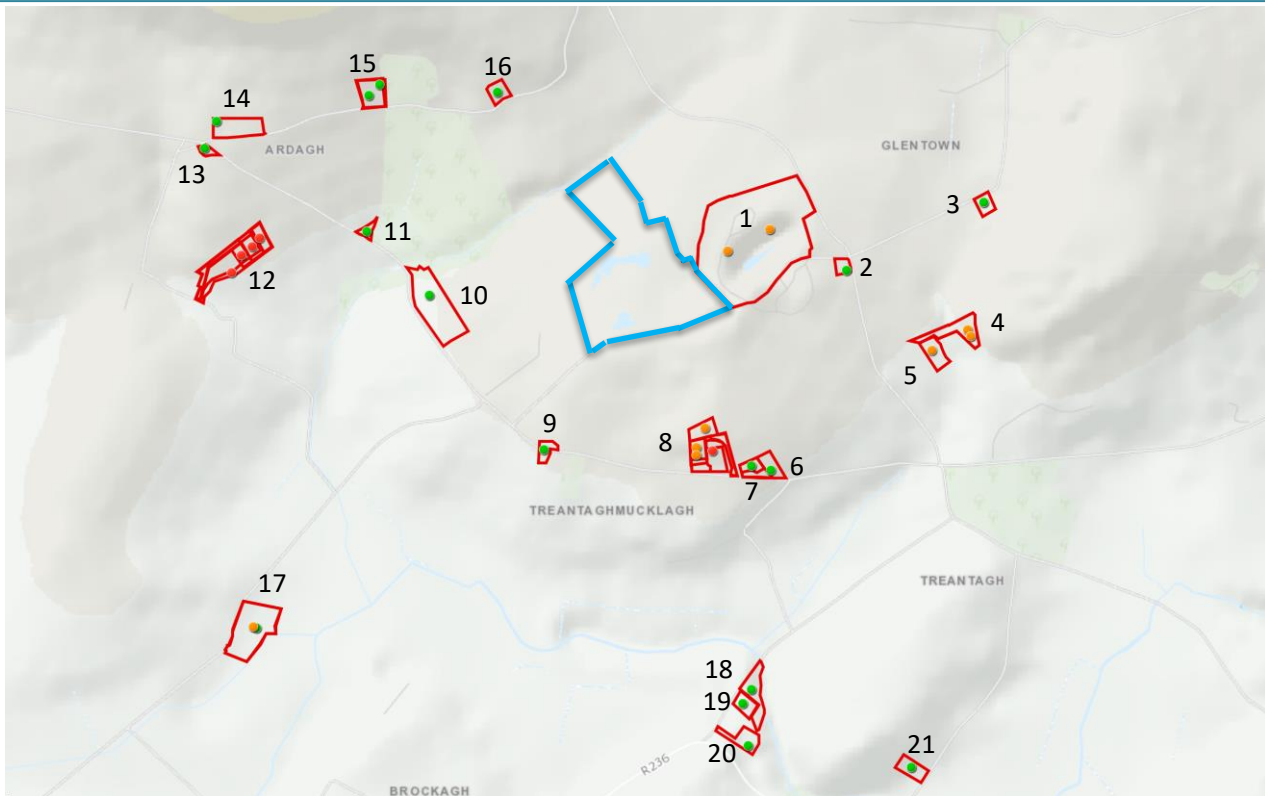


Figure 5.5 Planning sites within 1 and 2km of the quarry from www.donegalcoco.ie

5.8 Amenity

There are no sports or social or amenity facilities in the vicinity of the quarry that would have been affected by the presence of the quarry.

5.9 Human Health/ Health and Safety

Human health and its impact are largely dealt with in the other section of this EIAR and reference should be made to the relevant Sections.

Letterkenny Hospital is located 16km west of the quarry in Letterkenny Town. It provides a range of services including an Accident and Emergency Department while Altnagelvin Hospital in Derry City is located 19.2km from the quarry.

An earth berm has been constructed along a number of the site boundaries and acts as both a visual and acoustic barrier for the quarry from passing traffic while also providing a barrier to easy access to the quarry site.

The main issues arising from Quarry operations to human environment are health and safety issues.

Dust Emission: the owners of the quarry have carried out dust monitoring at the site perimeter boundaries to inform this rEIAR and a mitigation measure set out in the Air Section is that quarterly sampling be carried out.

Noise Emissions: recorded and predicted noise levels at local residences have been maintained within the accepted limits.

Blast events: Residential dwellings within 500m of the quarry at Trentaghmucklagh should be forewarned of the date and time of blast events.

For personal and general public visiting the quarry.

Ground Stability: Rock face and ground stability should be evaluated on a regular basis, by qualified personal, to protect personal working within the quarry and public safety issues relating to ground stability conditions during all phases of the existing and proposed project.

Quarry faces are managed and maintained to remove all significant rock overhangs, loose material and rocks within the face to prevent danger and to establish a solid, stable rock face. Over hanging rocks are dislodged so that they either fall safely in a controlled manner into the rock trap or are removed in the rock breaker.

Warning signs indicating quarry operations and access are located at the main public road. Additional warning signs are located at the main access point to the site. Other warning signs are placed within the site:

- No unauthorized personal beyond this point
- Reminders to wear protective clothing, hard hats
- Information on H&S requirements

PREDICTED IMPACTS OF THE DEVELOPMENT

This section provides a description of the likely significant effects of the quarry on the following: -

5.10 Population

The development, which involves the winning of aggregates, does not contain any element of housing or services development.

The population of the Small Areas fell by 2 persons (0.95%) between 2011 and 2016, while at the same time the countywide population fell 1.22% and the Trentaghmucklagh ED population rose by 4.95%. There is evidence of strong demand for new housing and agricultural development in the vicinity of the quarry, which would generate demand for aggregates such as those produced at Tinney's quarry which also supplies stone for drainage to local farmers.

If demand for aggregates increases continues it would help to quarry to sustain the existing employment level at 4 people as of June 2022 and would have a long term positive impact on population levels in the vicinity of the quarry while the impacts on the environment would not be significant.

5.11 Economic Activity/Employment

At its peak of production up to 10 staff were employed as the quarry supporting local families and supporting the local economy.

The quarry currently employs 4 staff while indirect employment is also generated in terms of maintenance fitters, fuel delivery personnel and general suppliers of goods services and professional services such as accountants, and specialists in dust, noise, and water monitoring. Through the proposed extension to the quarry these jobs will continue to exist allowing people to continue living and working in the area and may enable the number of local resident working in the building and construction sectors in 2016 to return to and surpass the numbers thus employed as per census 2011.

In time, and subject to future applications and depending on the nature of work contracts won such as the proposed Ten-T roads, there may be scope for the direct employment of additional personnel within the quarry. The income derived from the four direct jobs are beneficial to the local economy The impact of the proposed development will be neutral to moderately beneficial if additional employment is generated.

If Substitute consent is not granted, the operations of the quarry will cease, the site will be restored and would result in the loss of all direct jobs at Tinney's quarries unless or until another grant of permission is issued for further quarrying within the applicants overall landholding. Short term employment would be provided in relation of the restoration of the lands.

5.12 Settlement Patterns

From a review of the existing settlement pattern and the planning history of the area since 2000, the existing quarry operations have had no discernible impact on the desire of people to build new home or to extend and improve existing homes in the study area (within 1-2 km of the quarry).

The demand for additional housing in the area is high. It is considered that the development has had a neutral impact on the local settlement pattern.

5.13 Land Use

The impact on the existing quarry use of the land is discussed in several other sections but the impact is permanent and severe, with the overall impact on 'Agricultural Areas – Pastures' considered to be slight.

Provided that mitigation measures are carried out as set out in other sections of this rEIAR, the operation of the quarry will not have a negative impact on land uses outside of the site.

5.14 Amenity

No impacts are predicted to have occurred in respect of amenities.

5.15 Human Health

Impacts on Human Health are addressed in other chapters of this EIAR under the headings of Noise Air, Climate, Water, Material Assets and The Landscape and Restoration. The possible impacts of the development can be summarised as: -

- During the initial soil removal and berm construction phase, the generation of dust, particularly during periods of dry weather.
- The generation of noise and vibration during blasts and in moving material from the blast faces to the processing plant.
- The leakage of oils and fuels from plant and machinery leaking to spoils and or surface water/groundwater.

MITIGATION MEASURES

This section will address mitigation measures in relation to Population, Employment, Health and Safety. Mitigation measures relating to Human Health will be addressed in later chapters in respect of the specific issues listed above that may affect Human Health.

5.16 Population

Twenty one residential homes are located within 500m of the existing quarry site, with those located closest to the proposed extensions also located in close proximity to the adjacent quarry to the east while a number of slatted sheds have been permitted in what is working agricultural landscape where activity, noise of machinery etc is common. It is not considered that any mitigation measures are necessary in respect of population over and above those set out in the other chapters relating to landscape, air, noise, material assets etc.

Site operation will be during normal day working hours. The existing landscaped berms will be enhanced by new berms thereby reducing visual, air, noise and vibration impacts from the quarry.

As part of the short term landscaping proposals for the site, it is recommended that an additional landscaping berms are constructed which will help eliminate the limited visual impact of the quarry as well as further reducing potential noise, vibration and dust impacts on the property. This berm measure should be a permanent feature and will form part of the restoration programme as the quarry progressively becomes exhausted.

5.17 Employment

As an employment source in the area, the continued operation of the quarry will help sustain jobs in an

area. Therefore, no mitigation measures are considered necessary.

The quarry currently has four full-time employees. Indirect employment is also generated in terms of maintenance fitters, fuel delivery personnel and general suppliers of goods services and professional services such as accountants, while wages earned are spent in the local economy.

Although small, the maintenance in employment levels at the quarry would have a positive impact for the local area.

5.18 Health and Safety

Additional warning signs should also be erected on the perimeter of the quarry regarding the nature of the work carried out in the quarry and the associated risk of injury that may occur as a result of access by unauthorised personnel.

If substitute is granted, it is recommended that an Environmental Management System (EMS) be put in place as part of any future applications for further development, that will address all of the following areas, many of which are addressed in more detail in the remainder of this rEIAR: -

- Public Safety and Security
- Visual Amenity
- Ecological Management
- Noise Emissions
- Emissions to Air
- Fuel
- Water Discharge
- Management of Waste
- Transport
- Restoration and After use

CUMULATIVE IMPACTS

Notwithstanding that this quarry is located in the rural area that is sparsely populated and is located adjacent to a certain quarry there has been a significant number of planning applications applied for and granted in the 12 years to 2022, which indicates that the impact of the operation of the quarries is not significant factor that would tear the population from applying for planning permission and/or building

homes in relatively close proximity to the quarry. This would be consistent with the findings of the air, dust, noise and water sections of this rEiAR, which concluded that there were no significant impacts on the environment as a consequence of the operation of the quarries, and any impacts that do exist would be significantly reduced by way of the existing or proposed mitigation measures.

There are no other industrial operations in the vicinity of the site that would have generated a cumulative impact upon human beings.

RESIDUAL IMPACTS

Details of specific residual impacts are outlined in the appropriate sections of the other chapters of this EiAR. In terms of population the impact of the proposed extensions to the quarry are considered to be positive.

UNPLANNED EVENTS

The EPA guidelines describe unplanned events as 'spill from traffic accidents, floods or land-slides affecting the site, fire collapse or equipment failure on the site'. The EIA Directive from 2014 refers to 'major accidents, and/or disasters such as flooding sea level rise or earthquakes'.

The staff numbers in the quarry are limited and the quarry is located within 19km of two major hospitals in Letterkenny and Derry. The site is not located proximate to the sea and due to its hilltop location is unlikely to flood with most rain entering the void coming from rainfall, with adequate water storage capacity on site to deal with even the heaviest of predicted rainfall events.

MONITORING

No proposed monitoring relating to the population aspects of the study area are deemed necessary. All other monitoring to be carried out from other chapters should address any potential concerns that may arise for human health.

DO NOTHING SCENARIO

If substitute consent is not granted, then the quarry will be deemed to be unauthorized and we'll cease production. Landscape restoration will be carried out on the site and this would have both a positive impact in terms of the landscape and geology and no more rock would be taken from this site, but it would have negative impact on the population in terms of the loss of local employment. The potential for negative impacts exists in terms of dust and noise from traffic related at other quarries that would take the place of Tinney's quarry, as they would then be providing for the aggregate needs of local area.

REINSTATEMENT

No reinstatement measures relating to the population aspects of the study area are deemed necessary. Human health issues are addressed in the other sections of this rEIAR.