Keegan Quarries Ltd.

Tromman Quarry, Rathmolyon

Remedial Environmental Impact Assessment Report

accompany a Substitute Consent Planning Application for the erection and operation of unauthorised structures and the continued extraction and use of ancillary buildings and structures post 5th August 2018 at Tromman Quarry

February 2024

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1.0 PREAMBLE

This Remedial Environmental Impact Assessment Report (rEIAR) has been prepared to accompany an application for Substitute Consent (the Application) made under made under s.177E of the Planning and Development Act 2000 ('the Act') (as amended by the Planning and Development, Maritime and Valuation (Amendment) Act 2022).

The Application being submitted to An Bord Pleanála ('the Board') for substitute consent ('SC'), the Planning Authority in this instance, is for the totality of the operational site to include the existing quarrying operations in the Townland of Tromman, previously permitted under various time limited planning permissions to include RPL 17.206702 (TA-130400) for the bulk of the quarry originally assessed in 2002 and PL17.235960 (TA-130581) for the southern extension to the site (2010).

The site is located in the Townland of Tromman some 2.2 kilometres northwest of Rathmolyon Village and some 6.4km south of the town of Trim. The site is bounded to the west by Kilsaran's Tromman Quarry, to the south by the regional road R156 and to the north and east by agricultural fields. The precise location of the site's application area can be seen from Figure 1.1 overleaf.

The application seeks the regularisation of structures associated with quarrying operations that Meath County Council consider to be unauthorised and the existing extraction operations that post-date the extended appropriate period of 5th of August 2018 for the quarrying operations. The unauthorised structures considered within this rEIAR include an electrical substation, Limestone Powder Plant (which is mistakenly referenced as a second batching plant in enforcement correspondence from the Council) comprising feed hopper,

crushing and screening plant, dispatch points, drying plant and storage sheds, a batching plant and the unauthorised construction of a precast concrete manufacturing industrial unit. However, it is the extension to the concrete manufacturing structure (the industrial unit) that has triggered the requirement for this rEIAR, as without the planning difficulties that the erection of the same presented a standard continuation application would have been possible for the extractive elements.

The remainder of the structures situated in the concrete products area towards the northern end of the site are covered by individual planning consents that run contemporaneously with the mineral extraction consents, other than the concrete silo that had consent that was limited in duration by condition to period of 3 years. Cumulatively, it is considered that the continued operation of the quarry and the associated structures require environmental impact assessment as a single project.

It is understood that the Board will only consider an SC application and can only grant planning permission in terms of the extant operations on site and applied for at the time of submission[1], therefore excluding future development.

As such, it is the applicant's intention to submit a planning application for the continuation of quarrying activities and associated development with an extension to the existing quarry, under a planning application made under Section 37L of the Act. It is not intended to duplicate the s.37L application and its associated EIAR in this document but outline consideration and reference to the same is made in order to cover all reasonable expectations and accord with legislation and best practice guidance.

[1] The Board's interpretation of S/C provided by Assistant Director Philip Jones on 25 October 2012

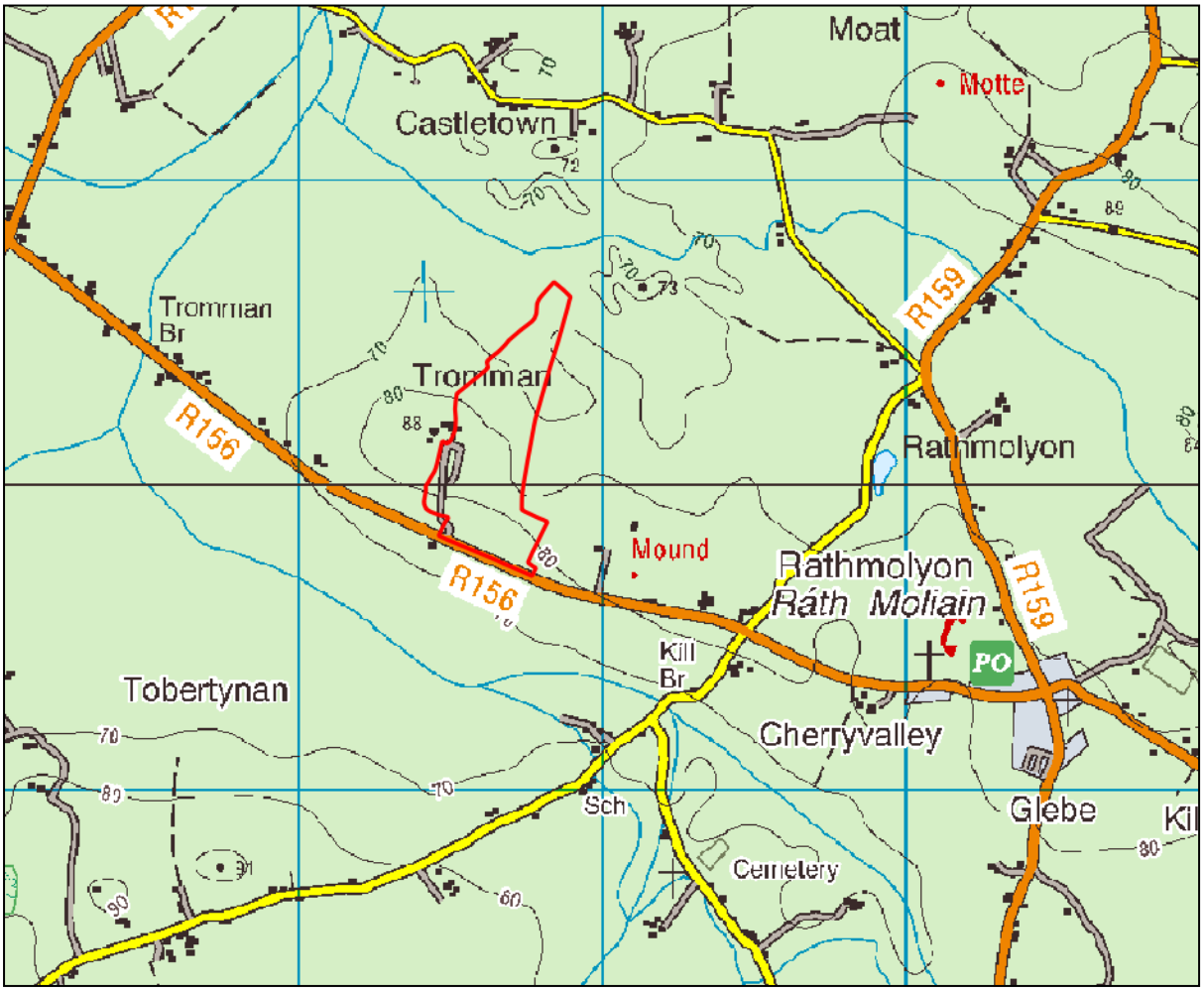

Figure 1.1 Site Location

1.1 Planning History

The totality of the operational site has a well-established planning history dating back to the original consent for a quarry and associated works in 1998 (97/1868), followed by ancillary consents for the northern concrete products yard in 2001 (00/2075) and 2003 (TA/20408) which provided consent for the mobile block making plant and for the structure for manufacturing concrete floors and associated works in each instance. The extraction consent was accompanied by an Environmental Impact Statement (EIS).

In 2004 under PL17.206702 (PA ref. TA/30334) approval was provided for the bulk of what is now the operational quarry. Covering some 13.94ha, the consent consumed and superseded the earlier permission. This application was accompanied by an EIS and provided for extraction across the quarry void to a level of **13mAOD**. This application was the first at the site to be considered by the Board, in which it affirmed the Planning Authority's decision. The duration of the permission was extended under PA ref. TA/1 30399 and TA/1 30400 to August 2018.

Under PL17.235960 (and PA ref. TA/900976) the extraction area of the quarry was further extended by c.2.85ha, on land towards the southern extent and to the east of the original quarry. The term of the consent was devised to determine contiguously with the larger operational consent and likewise was extended for a further 5 years under PA ref. TA/130581, again to August 2018.

Also, of relevance in this particular case, given that it is the unauthorised industrial structure that has given rise to a requirement for an application for SC. It is on record that an enforcement notice UD/1 5/284 (31st March 2017) was served on the applicant in relation to 'unauthorised newly constructed block work electrical sub-station, construction of pre-cast concrete units i.e. silos/storage bays, 2 no. concrete batching plants and associated plant and a large industrial building'.

A summary of the applications is provided for ease of reference; in reverse chronological order from the most recent to the original application for the sites.

- In 2018, under PL17.249285 (PA ref: TA/161345) the Board refused the relocation of permitted blockyard and precast manufacturing plant, mixing / batching plant and associated landscaping works to the south

of the R156 for the following reasons. The proposed development is dependent on the operation of the existing quarry to the north the existing block yard and existing pre-cast concrete manufacturing facility which expired on the 5th day of August 2018.

The following reasoning was provided:

"In the absence of a development strategy for these adjacent lands and a valid planning permission for the on-going operation of the quarry, it is considered that the proposed development, located on the opposite side of the R156 to existing quarry activity in the area, on low-lying land, would represent a piecemeal and disorderly approach to the development of the site and to the expansion of overall activities. Having regard to the location of this site the proposed development would seriously injure the amenities of the area and of property in the vicinity by the encroachment of an industrial type activity into an open rural area".

- In 2017, under PL17.248115 (PA ref. TA/161419), the Board granted permission for the temporary, three-year, retention of a concrete silo structure, with a footprint of 99m2 and measuring 28.6m in height, associated with and ancillary to the existing permitted precast concrete facility permitted under PA ref. TA/20408.

- In 2017 the planning authority considered three declarations sought under Section 5 as to whether or not development that had been carried out at the site (lime drying, batching plant and ESB sub-station) constituted development and was or was not exempted development. For each, the planning authority considered that the works carried out

constituted development requiring planning permission (PA refs. TA/S5/1655;TA/S5/1 656 and TA/S5/1 623).

- In 2013, under PA ref. TA/130581, the planning authority granted permission for the extension of the duration of the permission granted under PA ref. PL1 7.235960 (TA/900976), with permission to expire on the 5th August 2018.

- In 2013, under PA ref. TA/1 30401, the planning authority refused permission for the extension of the duration of PA ref. TA/900976.

- In 2013, under PA ref. TA/1 30400, the planning authority granted permission for the extension of the duration of planning permission granted under PL17.206702 (PA ref. TA/30334), with permission to expire on the 5th August 2018.

- In 2013, under PA ref. TA/1 30399, the planning authority granted permission for the extension of the duration of the permission granted under PA ref. 97/1 868, with permission to expire on the 5th August 2018.
- In 2010, under PL17.235960 (PA ref. TA/900976), the Board decided to grant permission for the extension of the quarry extraction area (2.85ha).

- In 2004, under PL17.206703 and PA ref. TA/30334, the Board decided to grant permission for retention, continuance and extension of quarrying (including modification to layout permitted under PA ref. 97/1868). The application was accompanied by an EIS. Condition no. 7 required the extension and entire quarrying operation to be completed within 15 years as per the conditions granted under PA ref. 97/1 868.

- In 2003, under PA ref. TA/20408, the planning authority granted permission for the erection of a building to manufacture concrete floors, pipes, blocks, bricks and associated products.

- In 2001, under PA ref. 00/2075, the planning authority granted planning permission for a mobile block making plant, concrete yard and water settlement tank, including temporary offices and storage shed.

- In 1998, under PA ref. 97/1 868, the planning authority granted permission (15 years) for a quarry on 8.5ha together with a workshop, a mobile pressing plant, wheel wash, weighbridge and fuel storage unit and truck parking.

1.1.1 Previous Attempts at Regularisation

An application for leave to apply for SC (reference LS. 303334) was submitted to the Board in December 2018 on behalf of the Applicant, seeking to avail of the facility to apply for SC; as previously provided for under s.177C(2)(b) of the Act (now deleted as a consequence of the Planning and Development, Maritime and Valuation (Amendment) Act 2022).

The Board held that the subject application was one which met the requirements of Section 177C(2)(a)(ii) and that exceptional circumstances existed in this case and by Order directed the applicant to make an application for SC, accompanied by rEIAR and rNIS.

The application for SC was subsequently made to the Board in July 2019 and registered under the reference ABP-305049-19. During the period in which the SC application was being determined by the Board, the decision of the Board on the leave to apply case was challenged through the judicial process and

the Board's decision was quashed. The Board confirmed to the Applicant in a letter dated 13th December 2022 that consequent to the quashing of the grant of leave to apply, that it could not continue processing the SC application. The application was deemed invalid and returned.

Planning Applications were also made to Meath Co. Co. in December 2020 under Section 34 of the Act for the retention of development at the Site and continuation and future extraction at the quarry under Meath Co. Co. Planning References TA201910 and TA201918 respectively. Under the terms of Section 34 (12) of the Act, the Planning Authority refused to consider the applications and both applications were returned in February 2021.

1.2 Legislative Context for EIA

The legislative context for the planning application accompanied by a rEIAR is derived from the European Communities Directive 85/337/EEC as amended by Directive 92/11/EU on the assessment of the effects of certain public and private projects on the environment.

The reporting system has developed because the European Union has adopted a Directive (2014/52/EU) (The Directive) in relation to Environmental Impact Assessment (EIA). The Directive was published in the Official Journal of the EU on 25th April 2014.

The Directive sets out a wide range of changes to the previous EIA Directive (2011/92/EU). The changes have been transposed into Irish law via Statutory Instrument No. 296 of 2018- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 that provides for amendments to the Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001 (as amended) ('the

Regulations'). This rEIAR has been prepared in accordance with the amended Act and Regulations.

Schedule 5 Part 2 of the Regulations implements Annexes I and II of the EIA Directive into Irish law and provides the following "thresholds" in respect of the extractive industry and infrastructure projects, so that an EIA is required in respect of, or against which an EIA determination is required:

2. Extractive Industry

(b) Extraction of stone, gravel, sand or clay, where the area of extraction would be greater than 5 hectares"

10. Infrastructure projects
(a) Industrial estate development projects, where the area would exceed 15 hectares.

The site exceeds the 5ha threshold for mineral extraction and the overall project has not been the subject of an EIA. Therefore having regard to the scale and nature of the project, it is necessary for the proposed development to be accompanied by an rEIAR.

There is no specific guidance in relation to the preparation of a rEIAR, however, s.177(F)(1) of the Act outlines that such a document shall contain:

"*(a) a statement of the significant effects, if any, on the environment, **which have occurred** or **which are occurring** or **which can reasonably be expected to occur** because the development the subject of the substitute consent was carried out*[2]*;*

[2] Emphasis Added

(b) details of—

i. any appropriate remedial measures undertaken or proposed to be undertaken by the applicant for substitute consent to remedy any significant adverse effects on the environment;

ii. the period of time within which any proposed remedial measures shall be carried out by or on behalf of the applicant;

(c) such information as may be prescribed under section 177N".

Section 177(F)(1A) also states that:

"The remedial environmental impact assessment report shall be prepared by experts with the competence to ensure its completeness and quality".

Furthermore s.177E(4)(A)(a) of the Act, relating to the Boards evaluation of rEIAR, reflects the general requirement under s.171A that:

"The Board shall consider whether a remedial environmental impact assessment report submitted under this section identifies and describes adequately ***the direct and indirect significant effects*** *on the environment of the development."* [3]

In the absence of any specific guidance on the production of rEIAR it is considered appropriate to reference the requirements of the Act and the Regulations along with the general requirements, as far as they are applicable, of the Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment August 2018 ('the Guidelines') and Guidelines on the information to be contained in Environmental Impact Assessment Reports, EPA, May 2022 ('EPA Guidelines').

[3] Emphasis Added

In preparing this application and accompanying rEIAR it is considered essential to take into account the environmental information that has been considered previously by the Planning Authority and the Board, which has been considered to be representative and acceptable information to provide an accurate environmental baseline for the site upon which the structures have been built. This is an appropriate approach to avoid unnecessary duplication of information and is recommended by regulation 222A of the Regulations. Table 1.1 below outlines the Environmental Impact Assessments and determinations considered when preparing this Report.

Planning Reference	**Applicant**	**Project Description**	**Decision**
TA30334 / RPL17.206702	Keegan Quarries Ltd.	Continuation and extension of quarrying to 13mAOD.	Approved 2004
TA/70175 / PL17.227088	Cemex (ROI) Ltd.	Extension by deepening of a 16.1Ha site to 24mAOD.	Approved 2009
TA60629 / PL17.226884	Keegan Quarries Ltd.	Extension of an existing quarry with tunnel connecting to the proposed establishment of a precast concrete plant etc to the south of the R156.	Refused 2009
TA900976 / PL17.235960	Keegan Quarries Ltd.	2.85Ha southern extension of Tromman quarry to 50mAOD	Approved 2010
QY76 / QV17.QV0182	Readymix Ltd / Cemex(ROI) ltd. & Irish Asphalt	Review under s.261A(6)(a)	Council decision set aside.
QY75 / QY17.0217	Keegan Quarries Ltd.	Review under s.261A(6)(a)	Council decision set aside.
TA161345 / PL17.249285	Keegan Quarries Ltd.	Relocation of blockyard, precast concrete and block manufacturing plants to the south of the R156.	Refused 2018
ABP-305049-19	Keegan Quarries Ltd.	Application for Substitute Consent for quarrying and manufacturing facilities	Application returned 2022

Table 1.1 Environmental Impact Assessments and determinations considered

The rEIAR also utilises the continuous environmental monitoring information and updated specific environmental reports where applicable to reflect the changes on the Site post the 2013 baseline date.

Finally, it is intended to reflect the stated requirements of the Board with reference to the three phases of the specific development cycle outlined.

1.3 REIAR Format and Structure

The Board has previously advised in it's determination on leave to apply for SC (Ref LS.303334) and previous guidance to the author with respect to this and other SC application cases, as follows:

- The 2013 commencement of construction of unauthorised structures is the appropriate commencement date to be considered as a baseline for EIA purposes.
- Any previous inspector's report and any criticisms of previous EIS's should be taken into account.
- In the preparation of an rEIAR, it is appropriate to consider the requirements of prescribed bodies as outlined in responding to previous statements and determinations in relation to the site and in this case the adjacent site in order to determine an accurate scope for the rEIAR.
- The REIAR should include an informative and honest statement in relation to any data, deficiencies or difficulties encountered.
- The application is to be accompanied by a remedial Natura Impact Statement (rNIS).

This rEIAR is produced in the Grouped Format Structure and is compiled and presented in as transparent and as open a manner as possible. The various

authors involved in its compilation have attempted to present their findings and recommendations in a clear and unambiguous fashion. The rEIAR comprises three separate parts:

- The Non-Technical Summary;
- Volume 1- the Main remedial EIA Report; and
- Volume 2- the technical appendices.

Volume 1 of the rEIAR is presented in the following format:

The Main Report

Section 1 The preamble outlines the background and terms of reference for the rEIAR and outlines the format and the assumptions that underpin the statement.

Section 2 Review of the reasonable alternatives considered by the applicant and the scope of the assessment with respect to the site's particular characteristics.

Section 3 describes the features of the progression of the unauthorised built development from 2013 to present, prior to considering the continuation of quarrying from 2018 to present, outlining the development undertaken to date and provides a review of the alternatives considered.

Section 4 defines the planning and development context in which the planning application is assessed.

Sections 5-18 incorporates the main body of the rEIAR and outlines the aspects of the environment likely to be significantly affected by the construction of unauthorised structures in the concrete manufacturing area of the site, with the relevant date of the construction being 2013 and the continued operation of the extraction activities in the quarry beyond the 5th August 2018 and the interrelationship of each discipline, as identified in the Regulations.

population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and the landscape.

As the rEIAR is produced in the Grouped Format Structure, this approach can lead to certain topics, such as human health, being covered to varying degrees in most of the individual Sections, whereas other specific areas required under legislation fall almost exclusively into one Section. For those aspects of the environment likely to be significantly affected by the proposed development, that fall neatly into one or two sections the sections within which they are covered are shown overleaf.

Section	Heading	Aspects Required to be covered under the Regulations
5	Geological Assessment	Soil – Material Assets
6	Water Environment	Land-Water-Population and Human Health- Climate Change, Accidents and Disasters
7	Noise, Vibration and Blasting	Population and Human health – Material Assets
8	Biodiversity	Biodiversity
9	Landscape	Landscape
10	Air Quality and Dust	Air – Biodiversity- Population and Human Health-Climate
11	Traffic Impacts	Noise-Air
12	Cultural Heritage	Cultural Heritage
13	Waste Management	Landscape – Material Assets Population and Human Health Climate Change, Accidents and Disasters
14	Soil and Natural Resources	Soil
15	Socio-Economic Impacts	Population and Human Health
16	Climate Change, Accidents and Disasters	Climate, Major Accidents and Disasters
17	Human Health	Human Health
18	Intra and Inter Cumulative Impacts	Inter-relationship of above factors

Table 1.2 Sections within EIAR that cover the Aspects Required to be covered under the Regulations

1.4 REIAR Baseline

The requirement for this SC application has been determined by the construction of unauthorised structures in the concrete manufacturing area of the site, with the relevant date of the construction being 2013. In addition, the continued operation of the extraction activities in the quarry beyond the 5th August 2018 is also required to be regularised. It is considered by the Applicant and as previously agreed by the Board via the (now quashed) grant of leave to apply for SC, that the Board is satisfied that the erection of the structures in the manufacturing area, in combination with continued quarrying activities as a single project would have triggered a requirement for an EIA.

Accordingly, the commencement of the construction of structures provides the effective commencement of the baseline against which the EIA reporting will be assessed.

Post 2013 forms the baseline commencement date upon which the significant effects, if any, on the environment will be assessed;

- which **have** occurred;
- or which **are** occurring;
- or which can reasonably be expected **to occur** because the development the subject of the substitute consent was carried out.

In addition, it is also considered appropriate to consider the continued environmental impact of operations in the remainder of the site from the 5th August 2018 onwards, the point at which the continuation of site activities became unauthorised. It is considered that these in-combination effects will allow the site to be assessed as a single project.

It is considered that, the 5th August 2018 effectively comprises an additional baseline date, following which the environmental impact of all the site activities will need to be cumulatively considered, as SC is also being sought for the activities that occurred in the lacuna between the expiration of consent and the submission of this SC application.

It is considered that the environmental impacts associated with the manufacturing buildings and structures from 2013 in combination with quarrying activities which have taken place post 5th August 2018 until present day provides for the assessment of impacts that **have occurred**.

An assessment of the environmental impacts currently being experienced at present at the Site allows for the assessment of impacts **that are occurring**.

It is considered that 2 scenarios are likely to occur in the future. The first is that mineral extraction will cease, all associated buildings and structures will be removed, and the quarry will be restored. The second scenario is that quarrying operations and associated manufacturing will continue at the site, as proposed via the linked application proposed to be made to the Board under Section 37L of the Act.

The final stage of the assessment will cover the remedial impacts that can **reasonably be expected to occur**, considering each of the 2 scenarios above.

With regards to the requirement of the legislative requirement to outline the likely evolution of the baseline, given the nature of the SC process, the baseline period considers operations at the since over a specified period of time (i.e. from 2013 to present). Examination of the baseline in the manner as described earlier in this section therefore extends beyond the consideration of *likely* baseline position to consideration of the actual position (i.e. the actual impacts

that have been experienced at the site to date. Given the same, the rEIAR is considered compliant with the legislative requirements in this regard and insofar as applicable to the SC process.

1.5 Pre application Consultations

Pre application consultations have not been held with the Board. The scope of the EIAR has been determined by the project team, who all have significant experience in environmental assessment within the minerals sector, as outlined at Section 1.7. There have been numerous planning applications at the Site over a period of 20+ years, accompanied by EIS's for the subject site and the adjacent site. Review of these previously accepted documents in conjunction with previous determinations by the Board with respect to s.261A have all been undertaken by the contributors to the EIA. It is therefore considered that the scope of this rEIAR is well established.

1.6 Difficulties Encountered whilst preparing the REIAR

Some difficulties were encountered during the preparation of the rEIAR as outlined below:

- Difficulties were encountered gaining access to some neighbouring properties with water wells to obtain water level and quality data, including those at the adjacent quarry, under Kilsaran's control; and
- Limited specific guidance is available on the production of rEIAR and baselines. This has led to application of generic EIA guidance and reference to legislative requirements.
- While the majority of 2023 ecological surveys adhered to the recommended timeframe for target species and habitats, programme constraints hindered the surveying of breeding birds until mid-July and

August, falling outside the optimal survey period (April to June). However, it is important to note that the primary aim of these surveys was to provide a contemporary update to data obtained in 2018.

The difficulties are not considered to have affected the overall conclusions of the rEIAR, which are considered reliable and accurate.

1.7 Competent Experts

The coordination of the competent experts and the production of this rEIAR has been managed by Chris Tinsley BA (Hons), DipTP, MRTPI of Quarryplan Limited, who has a proven track record of delivering planning and environmental projects, development plan representations and planning appeals. Chris has a proven record of managing EIA development projects, project managing, producing EIAR's and providing supporting environmental information to accompany regular planning applications, with specialist additional expertise in the area of minerals and renewable energy projects.

All external consultants have been appointed and project managed by Quarryplan. The specialist reports either form the relevant section of this rEIAR or are held within Appendices. In which case, they have been reviewed and summarised by the authors for ease of reading in the main body of the rEIAR.

Provided below is the contributor to each Section of the EIAR in accordance with one of the main features of the EIA Regulations, that an EIA must be carried out by persons with appropriate expertise. In this regard it is confirmed that the EIAR has been prepared by competent specialist experts, whom all have in excess of 20 years' experience in their chosen area of expertise.

The specialist reports include assessments of impacts that have occurred; that are occurring; and that can reasonably be expected to occur, which is considered to be compliant with the national legislation and guidance with respect to SC.

Section	Heading	Specialist Contributor
1	Introduction	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
2	Scope of the Environmental Impact Assessment	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
3	Project Description	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
4	Planning Policy Framework	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
5	Geological Assessment	Mike Williams, Quarry Design MGeol(Hons), MSc, MCSM, CGeol, Eur.Geol, FGS, MIQ Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
6	Water Environment	Henry Lister, BCL Hydrogeologists Limited B.Sc. (Hons.) M.Sc.
7	Noise, Vibration and Blasting	Mervyn Keegan, AONA B.Sc., M.Sc.
8	Biodiversity	James O'Connor, Woodrow APEM Group, BSc MSc PhD
9	Landscape	Pete Mullin, Mullin Design Associates BA (Hons) CMLI
10	Air Quality and Dust	Mervyn Keegan, AONA B.Sc., M.Sc.
11	Traffic Impacts	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
12	Cultural Heritage	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
13	Waste Management	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI Mike Williams, Quarry Design MGeol(Hons), MSc, MCSM, CGeol, Eur.Geol, FGS, MIQ

14	Soil and Natural Resources	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
15	Socio-Economic Impacts	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
16	Climate Change, Accidents and Disasters	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
17	Human Health	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI
18	Intra and Inter Cumulative Impacts	Chris Tinsley, Quarryplan BA (Hons), DipTP, MRTPI

Table 1.3 Specialist Contributors to REIAR

1.8 Trans-boundary Issues

The Project Site is located over 60km away from the national boundary between Northern Ireland and the Republic of Ireland. Given the separation distance and lack of any other pathway between the site and receptors in Northern Ireland (e.g. hydrological) it has been concluded that it is unlikely that there will be areas where there is a potential for trans-boundary effects.

If any such areas should arise within the individual assessments they have been dealt with, where they occur, in the relevant sections of the rEIAR.

2.0 REASONABLE ALTERNATIVES AND PROJECT SCOPING

The establishment of the extent of the scope of an EIA forms an integral part of the overall process. The aim of the scoping study is to consider at the earliest opportunity all elements that the project may impact upon. In addition, it is incumbent upon the assessment to consider alternative locations for the development.

Annex IV(2) of the EIA Directive requires an EIA to contain:

*'A description of the **reasonable alternatives** studied by the person or persons who prepared the EIAR, **which are relevant** to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed development on the environment.'* [4]

Indeed, the Guidelines recognise at paragraph 4.13 that:

"The type of alternatives will depend on the nature of the project proposed and the characteristics of the receiving environment. For example, some projects may be site specific so the consideration of alternative sites may not be relevant."[5]

Given the nature of the SC process, the potential for alternative site consideration is arguably removed, with the remedial EIA assessing the impacts that have, are, and are expected to occur at the Site. The legislation directs an applicant to, and indeed is only applicable to, the site in question, therefore

[4] Planning and Development Regulations 2001 as amended - Schedule 6 – Emphasis added.

[5] Page 27 Guidelines for Planning Authorities and AnBord Pleanala on carrying out EIA, August 2018.

rendering the alternative site element of the remedial EIA redundant. Equally, there is no scope of the 'Do-Nothing' alternative as the project being assessed has already occurred.

It is considered that the Board in previously granting leave to apply for SC, has determined that the project satisfies the parameters of exceptional circumstances, with no leeway for consideration of alternative developments.

Notwithstanding the above, it is considered that the information provided herein, demonstrates compliance with the requirements of the EIA Directive, regarding alternatives, as transposed into Irish Planning law.

2.1 Scope of the Environmental Impact Study

Legislation and guidelines outline that the scope of an EIAR needs to be determined by evaluating the aspects of the environment likely to be significantly affected by the development with reference to the following categories and their inter relationship.

- **Human Health**
- **Biodiversity**
- **Population**
- **Soil**
- **Water**
- **Air**
- **Climate**
- **Material Assets**
- **Cultural Heritage**
- **Landscape**

This rEIAR considers the potential significant effects and consequences on the environment of the development both in the past, currently and in the future and assesses whether such effects are:

- Direct or indirect;
- short, medium or long-term;
- reversible or irreversible;
- beneficial or adverse.

Where significant adverse effects are identified a description of the measures necessary to avoid, reduce or remedy these effects is provided (mitigation measures).

To determine the environmental aspects that should be addressed within this rEIAR, each of the main activities within the development were examined and potential impacts arising from those activities were identified, together with receptors of any such impacts. The main site activities, impacts and receptors are all identified within Table 2.1 overleaf.

Extant Activity	Potential Source of Impact (alphabetical order)	Potential Receptors (Alphabetical Order)
Construction and operation of the structures in the concrete manufacturing area of the site.	Air Landscape Noise Traffic	Human Health Landscape Population
Placement of overburden and processing waste into storage.	Land Use Noise	Human health Landscape
Maintenance of site waters	Discharge of ground water and surface water quality.	Human Health Water
Drilling and Blasting of rock Crushing of material and Haulage within the quarry.	Air Noise	Air Quality Ecology Human Health Landscape Water Environment
Transportation of material to and from site	Traffic	Human health / Population
Restoration and afteruse	Land use Visual	Landscape Ecology Population Water Environment

Table 2.1. Site Activities, Impacts and Receptors

From the identification of potential impacts and receptors, a scoping matrix has been compiled which gives a clear indication of the main impacts to be assessed within this remedial EIA. The scoping matrix is set out below in Table 2.2 and has been prepared in response to the various elements given detailed consideration previous Inspector's Reports associated with the EIA's undertaken by the Board as listed Table 1.1 earlier in this rEIAR.

Potential Source of Impact	Potential Receptor						
	Agriculture	Archaeology	Humans	Landscape	Water Environment	Ecology	Air Quality
Overburden	✓	✓	✓	✓	✓	✓	✓
Stockpiling							
Drill & Blast	✓	✓	✓	✓	✓	✓	✓
Visual			✓	✓			
Noise			✓			✓	
Dust	✓		✓	✓	✓	✓	✓
Traffic			✓				✓
After-use	✓		✓	✓	✓	✓	

Table 2.2. Scoping Matrix

The EPA Guidelines state that:

"Clear, concise, unambiguous information is essential throughout an EIAR. A systematic approach, standard descriptive methods and the use of replicable assessment techniques and standardised impact descriptions contribute to ensuring that all likely significant effects are adequately considered and clearly communicated".

Paragraph 4.5 of the guidelines describe how:

"Excessive length [of an EIAR] *can be a considerable barrier to effective public participation"*

This approach can be achieved by avoidance of duplication of optimised assessments and by focusing upon the "likely and significant" effects of a development. These elements need to be discussed in detail whereas other issues, with little or no significance, may require only brief investigation. This will indicate that an area has been given due consideration but has been

rejected from requiring a full investigation, in the interests of achieving a clear, concise and unambiguous EIAR which also allows for more effective public participation.

The environmental elements chosen for the commissioning of renewed specialist reports and updating with detailed scrutiny are as follows:

- Biodiversity
- Landscape
- Water Environment (Surface and Groundwater)
- Air Quality
- Noise and
- Vibration (Blasting)
- Population

Those additional elements that have been the subject of continuous monitoring such as in the case of blasting or periodic monitoring for the period starting with beginning of the baseline are:

- Traffic (via sales records / weighbridge)

Other areas that are considered less significant or have no potential for change since previous assessments were considered include:

- Geology
- Cultural Heritage
- Soils

Separate reports have been prepared for each of the significant elements by specialist consultants (experts). In addition, analysis of the monitoring report

results have been undertaken by the EIAR author and presented against the standards provided for within the Quarries and Ancillary Activities ,Guidelines for Planning Authorities - April 2004. Each section of the rEIAR considers the following:

- baseline study;
- identifying potential impacts that have occurred, are occurring and are reasonably expected to occur;
- predicting and evaluating the magnitude and significance of those impacts;
- proposing mitigation measures, where necessary; and
- any residual impacts subsequent to the mitigation measures proposed.

The remit of an EIAR is to consider all environmental aspects, which could experience impact from the development project, from which the identification of mitigation measures can be undertaken.

The purpose of the mitigation measures is to ensure that the development could be undertaken without creating any significant or unacceptable adverse impacts on the environment or amenity of the area going forward.

3.0 PROJECT DESCRIPTION

This rEIAR accompanies the planning application submitted to the Board for substitute SC for the erection of the unauthorised structures in the concrete products manufacturing (Northern area) of the site in 2013 and the unauthorised quarrying operations post the 5 August 2018 at Tromman Quarry, Co. Meath.

The site is located in the Townland of Tromman some 2.2 kilometres northwest of Rathmolyon Village and some 6.4km south of the town of Trim. The site is bounded to the west by Kilsaran's Tromman Quarry, to the south by the R156 regional road and to the north and east by agricultural fields. The precise location of the site's application area can be seen from Figure 1.1.

3.1 Previous Site Activity in the Context of a Substitute Consent Application

The Author, through previous experience of such matters, and discussions with the Board, is aware that the general content of a rEIAR must adhere to the legislative requirements as outlined in Schedule 6 of Planning and Development Regulations 2001 (as amended). It is also appropriate to reflect the Guidelines and the EPA Guidelines as previously discussed in Section 1.2 of this rEIAR.

There is no specific guidance in relation to the preparation of a rEIAR, however, 177(F)(1) of the Act outlines that such a document shall contain:

a) *a statement of the significant effects, if any, on the environment, which **have occurred** or which **are occurring** or which can **reasonably be expected to occur** because the development, the subject of the substitute consent was carried out;*
b) *details of—*
    i. *any appropriate remedial measures undertaken or proposed to be undertaken by the applicant for substitute consent to remedy any significant adverse effects on the environment;*
    ii. *the period of time within which any proposed remedial measures shall be carried out by or on behalf of the applicant;*

Furthermore the Board's evaluation of rEIAR will reflect the general requirement under s.177E of the Act which states that:

*"The Board shall consider whether a remedial environmental impact assessment report submitted under this section identifies and describes adequately the **direct and indirect significant effects** on the environment of the development."*

In order to address the effects that have occurred since the unauthorised development in late 2013 which it is understood constitutes the baseline for the unauthorised structures at the concrete products manufacturing part of the Site and since 5 August 2018 for the quarrying operations, it is considered appropriate to reference monitoring returns of past and present activities, aerial photography, and any other available environmental information before addressing the impacts that might reasonably be expected to have occurred at the Site.

It is widely accepted that the quarrying undertaken at the Site has been an authorised operation since 1998 upon approval of the first application,

accompanied by an EIS until August 2018 and has operated in accordance with the approvals and assessments during this period.

Given the relatively recent nature of the unauthorised development that triggered the requirement for SC, the development progression is accurately documented in the Google earth aerial date stamped imagery below. The specific potential impacts of the development will be considered in the individual technical sections of this REIAR, as far as is applicable and practicable. The imagery is provided to illustrate and corroborate the timeline involved and to provide confirmation of the nature and extent of the physical changes that have taken place during the period from 2013 to present, initially in the northern manufacturing part of the site and subsequently referencing the whole site, as quarrying operations became unauthorised in 2018.

In addition to the construction of unauthorised structures in 2013, it is also considered appropriate to consider the continued environmental impact of activities in the remainder of the site from the 5th August 2018 onwards, the point at which quarrying operations became unauthorised.

3.1.1 Impacts that "Have occurred"

In terms of the legislative requirements with respect to SC, it is considered that with reference to the assessment of the environmental impacts that have occurred, the appropriate period for consideration is from 2013 to present. This is the period when the precast manufacturing structures in the northern part of the site and other ancillary developments were erected. Within this period it is also necessary to consider the period from 4th August 2018, the time at which quarrying became unauthorised, to present.

The 5th August 2018 therefore effectively comprises a date, following which the environmental impact of **all** the site activities which have occurred at the site (both pre-cast manufacturing/ancillary processes and quarrying) will need to be cumulatively considered.

3.1.2 Impacts that "Are occurring"

This stage of the assessment considers impacts that are currently being experienced at the Site. This allows for a description of the relevant aspects of the current state of the environment at the quarry and its surrounds at the time of writing in 2023. It provides an assessment of the data collection with respect to a number of environmental parameters which is currently ongoing at the quarry, and supplemented with competent expert Site Visits and surveys undertaken during 2023. This stage allows for the assessment of impacts **that are occurring**.

3.1.3 "Reasonably expected to occur"

The final stage of the assessment is to consider the effects that can **reasonably be expected to occur** as a result of the development for which SC is required. It is considered that two scenarios can be reasonably expected to occur.

The first scenario is that this SC application and the accompanying s37L application are not granted. In this instance, all quarrying and associated manufacturing operations at the Site would cease. The existing manufacturing buildings and structures would be removed, all plant and equipment associated with the same would be removed and the site remediated and restored. Existing water management practices would cease and de-watering pumps would be turned off and removed. The remediation and restoration efforts would likely involve the movement and placement of limited volumes

of overburden material and the natural formation of a waterbody within the quarry void. This scenario would see the loss of employment of the 40 direct staff at the Quarry, with a significant impact on the 140 indirect staff supported by the mineral at the quarry.

The second scenario is that this SC application and the accompanying S37L applications are granted. This would result in development at the Site to date becoming regularised and a continuation and extension of quarrying operations and associated manufacturing and ancillary operations at the Site.

The predicted impacts associated with the continuation of operations and the extension of the existing quarry are detailed in a separate EIAR submitted as part of the S37L planning application package. It is not intended to duplicate the S37L application and it's associated EIAR in this document, however reference will be drawn to the information contained within the same, in order to allow for an adequate assessment of impacts "reasonably expected to occur" within this rEIAR, as required by the legislation.

3.1.4 Unauthorised development Chronology

Sequential historical imagery from Google Earth has been used below to illustrate the chronology of the construction of the unauthorised structures within the established footprint of the concrete manufacturing area of the Tromman Quarry site. It is considered that this verifies the introduction of each element and the final images illustrating the progression of the quarry faces post the 5 August 2018.

18 April 2009

The above image is provided to illustrate that the development at the site which was in accordance with extant planning permissions and provides a record of activities that predate the 2013 period of unauthorised activity.

12 July 2013

The above image has been annotated to clearly mark up the introduction of a ready mixed concrete batching plant in the south east corner of the manufacturing part of the Site and the upgrading of the ESB substation on the western boundary at the beginning of the unauthorised period.

17 July 2016

The above aerial image from July 2016 confirms that at this time the concrete manufacturing yard including the recently erected limestone fines plant, (circled red) and the concrete batching plant, blockyard and pre-cast manufacturing structure is evident with a paved surface throughout the entirety of the northern extent of the site. The storage of concrete blocks on the open yard, immediately to the east of the permitted building (see inset) is also evident.

24 March 2017

In 2017, the layout of the Manufacturing part of the Site as it currently is, is evident with the erection of the portal frame extension to the pre-cast manufacturing unit on the eastern part of the concrete yard and the internal arrangement of the concrete block making yard and associated storage area, reverting to the central location, see inset.

14 July 2018

The above Google image from July 2018 is provided to illustrate that there has been no further alteration to the manufacturing area within the northern part of the Site. This is further verified by way of the Applicant's own orthophotography overleaf which provides a snap shot of the whole site during the month of August 2018 benefitting from the higher resolution of a low level drone.

27 August 2018

17 August 2023

The final two high resolution images provided above from August 2018 and August 2023 illustrate the organised nature of the operational site, which to a degree is the product of the restricted lateral extent of the site combined with associated good management practices. The image reflects the continuation of concrete product manufacturing activities in the northern part of the site and illustrates that extraction activities are continuing to source materials from the quarry void.

The imagery from the quarry void shows that the faces are developing in a generally southerly direction. An additional small sinking in the quarry floor to create sump is evident, along with a ramp along the eastern boundary of the Site, providing access to the quarry benches from the upper benches. A new improved water settlement system is also evident in lands to the east of the overburden tip (see inset). The system has been constructed from pre-cast concrete tanks and has been developed in order to further enhance the settlement facilities at the quarry.

3.2 The location and extent of the Site

The overall SC planning application area extends to some 22.5ha in extent and is located completely within the Townland of Tromman, near Rathmolyon. The application boundary, for reasons previously outlined, incorporates the totality of the Applicant's operations and provides for the combined approach to development control previously sought by the Board when considering historical applications.

3.3 Physical and Development Characteristics

The concrete manufacturing part of the site is fully paved and was so, in advance of the construction of the various structures. The northern extent of the site's appearance reflects the manufacturing nature of the activities and has the appearance of an industrial estate, albeit within a rural setting.

The site's extraction activities have been the subject of numerous EIA's as outlined in Table 1.1 of this rEIAR and it is considered that the geological baseline is well established.

The site is subdivided into two distinct formations, with the active extraction area almost exclusively being underlain by the Waulsortian limestone formation and the north western extent of the site (the manufacturing area) being underlain by the Lucan formation.

3.3.1 Construction

As provided for in the pictorial timeline above, each item in the northern part of the Site is either plant and machinery of steel portal frame construction, or in the case of the manufacturing building extension, a mixture of precast concrete and steel portal frame. Given the nature of the structures and the limited groundworks and additional services required, the construction periods in each case is less than 6 months.

The construction of each structure constituted the erection of the steel frame with a crane on site prior to cladding of the same with plastic-coated box profile cladding.

In addition and in advance of the above, the site's ESB transformer was upgraded in 2013 to provide continuity of supply, for the projected increased onsite electrical demand. The upgrade of the facility ensured that there was no requirement for secondary off-site projects in order to deliver an enhanced supply.

3.3.2 Concrete Batching Plant

Concrete is manufactured at the plant by mixing Portland cement and other cement graded materials with aggregates, sand and water in controlled proportions.

Sand is imported to site and combined with indigenous limestone dust and single-sized aggregates drawn from the adjacent quarry area by loading shovel or dump truck and is fed into the reception hopper. Selected aggregates and sand materials are fed into the feed hoppers which are proportioned by a weighing system to achieve the desired aggregate content in the mix recipe. The weighed proportioned aggregate batch is fed by inclined conveyer into the mixer in sequence, as required by the mixing program, for eventual direct loading as a completed wet batch into a truck mix vehicle.

Alternatively, the batch may be diverted into the dry batch bypass directly into a concrete truck mixer vehicle to eventually complete final mixing after introduction of cement powders and additives.

Bulk cement and other powders stored within sealed and vented silos, are separately conveyed to dedicated weigh hoppers by sealed screw conveyors for sequenced addition into the mixer or directly into the loading area of a truck mixer to complete the final product. Water and liquid admixture materials

may also be separately pumped from adjacent tanks into additional dedicated weighing hoppers for controlled addition into product mix.

3.3.3 Limestone Powder Plant

The process undertaken at the Limestone Powder Plant (Calcium Carbonate) is made up of 3 main elements:

- Reduction (Crushing);
- Sizing (Screening) and;
- Drying.

All 3 activities are undertaken simultaneously, providing for continual blending to provide a tightly specified end product. The raw limestone feed is introduced from the adjacent quarry void directly into two feed hoppers and comprises:

- An 8m down product (limestone grit to dust) and;
- a 30mm single sized aggregate.

The two materials are introduced simultaneously from their individual feed hoppers to their individual processes. The 30mm is passed along an incline conveyor to a Lanway (Hammer) Mill which reduces the incoming product to a minus 3mm output. Simultaneously the 8mm down is fed by conveyor onto a multi deck screen which divides the material into 4 different sizes:

1. Minus 8mm & plus 6mm;
2. Minus 6mm & plus 3mm;
3. Minus 3mm & plus 1.5mm and;
4. Minus 1.5mm.

All the minus 1.5mm material is forwarded directly to the gas fired, fluid bed dryer which super heats the material and dries it to less than 0.1% moisture. The material is then elevated to 3 tumbler screens on top of the silos.

The material is divided into 4 separate powder products at this stage;

1. Greater than 0.25mm,
2. Minus 0.25 & plus 0.50mm,
3. Minus 0.5 & plus 1.50mm and;
4. Less than 1.50mm.

During the drying process, the minus 100µm particles are removed by an air hood extraction system which is then elevated to a storage silo prior to delivery via tanker to the end user. The materials which are located in the silos are conveyed from the storage silos, to weigh hoppers prior to loading.

The plant produces 7 different individually sized products, these products can then either be blended to specific requirements for both internal consumption in the high specification precast products or to external customer requirements.

3.3.4 Processed Pre-cast Concrete

The extension to the original precast concrete products factory provides a modern state of the art operation to produce twin wall insulated product which is paint ready, for use in construction projects. A video of the process from start to finish can be found at the following link, however, the process is summarised below.

https://www.youtube.com/watch?v=X1JxNReZt3A

The pre-cast product designs originate in the Company's Head Office, also based on site, with the design department producing structural designs for final construction purposes.

This design is then forwarded to the host computer at the manufacturing site, which then plots the design on to a steel pallet, to include the detail for any electrical boxes and conduits.

The next station introduces the reinforcement spacers, in preparation for the next stage which is the introduction of the steel rebar from a fully automated robotic station for precision placement, in accordance with the structural requirements of the CAD design.

Following the placement of all reinforcement, spacers and conduits the concrete is ordered from the associated concrete batching plant, all of the aggregates are produced either on site in the case of aggregates or supplemented from the Company's sand and gravel sites in the case of the sand products.

The precision concrete mix process is fully automated and is then batched into a hopper that provides for accurate spreading of the 40N concrete within the waiting panel, which spreads the material on the now oscillating panel that ensures the removal of any air bubbles and ensures a high level of finish, negating the requirement for plastering either inside or out.

The panel then proceeds to the curing chamber, still under the control of the host computer and the second wall is created in exactly the same way before the two walls are joined by a fully automated process and once cured are stored on bespoke delivery trailers for storage, prior to delivery to site.

3.3.5 Aggregates

As outlined immediately above, aggregates are sourced from the adjacent quarry void, supplemented with sand from other company locations within Meath. Single-sized aggregates are produced with material from the blast pile being fed through mobile plant and machinery. Further information of the process is provided at Section 3.4. Limestone aggregates are produced at a rate of up to a maximum of 250,000 tonnes per annum as prescribed in previous EIS's. The Applicant's operations differ from some other limestone and pre-cast concrete producers, in that it sells aggregates to the open market as opposed to purely for internal consumption. The high-quality limestone aggregates are used for a variety purposes including for use in powders, pre-cast concrete, ready mixed concrete and concrete blocks, in addition to using the high chemical purity of the limestone in pyrite remediation.

3.3.6 Operational Emissions

The self-contained nature of the pre-cast concrete manufacturing unit ensures that emissions, either air or noise are reduced to a minimum and kept within appropriate limits. In addition the remainder of the manufacturing process, whether that be aggregate production, the ready mixed concrete, the powdered lime, or the block making facilities are all controlled by the Company's Environmental Management System.

3.3.7 Employment

Although a predominantly automated process the extended manufacturing process has provided some additional 10 full time skilled operative jobs, but the value-added facility helps to underpin the 140 direct employees and 40

indirect sub-contractors associated with the quarry and manufacturing processes at the Site.

3.3.8 Waste Management

The precise nature of manufacturing employed at the pre-cast manufacturing unit ensures that wastage is kept to an absolute minimum with only the exact amounts of materials utilised in the production of the product. Therefore, the minimal wastage arising is separated and stored or placed into skips for either recycling or removed from Site for disposal via a licenced haulier.

3.4 Quarrying Operations

Quarrying has occurred on the site in accordance with environmentally assessed development control protocols since the first grant of planning permission in December 1998. The general approach to operations has not varied substantially since this first approval and the unauthorised activities post 5th August 2018 have been confined to the main quarry void and therefore within the confines of the long-established disturbed footprint of the quarry.

Quarrying activities have continued to be undertaken in accordance with widely accepted, environmentally impact assessed parameters, with only the development control authorisation having lapsed. In short, whilst quarrying operations have not been authorised since 2018, up until this time and since then, they have been undertaken in accordance with widely accepted environmental limits and parameters.

The remainder of this section will summarise the quarrying operations undertaken since they became unauthorised in August 2018. As outlined in Section 2 above it is recognised that the rEIAR must reflect the requirements of Schedule 6 of the Regulations and detailed studies of the individual areas, where relevant, are provided later in this report.

3.4.1 Drilling and Blasting

The process adopted to produce blast rock for the purposes of processing utilises a fully mobile air drill rig, with drilling being undertaken on average two days every month. The impacts of this drill rig and mitigation measures adopted are outlined in the Air Quality & Climate and Noise & Vibration Sections of this rEIAR respectively.

Post the 5th August 2018, blasting has occurred up to twice every month. This involves the controlled filling of the drilled holes with explosive material and the inclusion of detonators and charges. The holes are then detonated in a tight time sequence to ensure that the potential impact is limited to the equivalent nature of one component hole of the blast. The measured impacts for the unauthorised blasts are considered in detail in Section 8.

3.4.2 Processing of Material

The processing of material within the site has continued to be undertaken within the quarry void, with the blast pile being fed into the existing mobile primary jaw crusher, using a loading shovel. This enables the blast material to be reduced to the optimum single size, for introduction into associated secondary and tertiary mobile screening facilities.

The crushing and screening units are fully mobile and are able to operate on any standard bench removing the requirement for the blast rock to be hauled. The primary reduced material is delivered in to a semi fixed secondary and tertiary crushing and screening unit. Modern mobile primary track crushing and screening units are fitted with dust suppression units and enclosures of all potential emission points.

The use of the mobile plant results in a reduction in internal haulage from blast pile to a static plant site which may be some distance away, within the quarry. In addition, the potential emission points with respect to dust and noise which are associated with mobile plant being adjacent to a working face which is at a level significantly below the level of the surrounding lands, affords significant natural attenuation.

3.4.3 Vehicle Movements

The site continues to operate with vehicle movements at a level of some 55 two way trips per day, which equates to annual mineral extraction in the region of 250,000 tonnes. Vehicles using the Site are made up of a combination of articulated vehicles, both flat bed and tippers, and standard eight-wheel rigid lorries.

3.4.4 Hours of Operation

The quarry operates to industry standard hours of 07.00 to 19.00 Monday to Friday and from 07.00-14.00 on Saturdays. The quarry does not operate on Sundays or Bank Holidays.

3.4.5 Quarry Employment

The quarrying operation directly employs 8 staff, however all activities within the Keegan business are reliant upon the continuation of the high quality resource quarried at the Site. It is therefore realistic to state that the entirety of the Company workforce, now numbering 140 direct employees and the 40 indirect sub-contractors rely implicitly on the continuation of the primary resource supply.

3.4.6 Discharge and Fuel Storage

The site is subject to a Discharge Consent Licence and the discharge water passes through the settlement infrastructure in the north east corner of the Site. This system has been upgraded in 2023 to include additional settlement facilities along the eastern boundary of the Site. The efficacy of this facility is discussed in greater detail in Section 6 and Appendix 6.1.

With respect to fuel storage, the site operates a two-tier system with road going vehicles being fuelled from the fully bunded and enclosed double skin tanks within the quarry workshop adjacent to the quarry offices.

The mobile plant within the void is fuelled from a mobile fuel tanker. All the remaining machinery in the quarry void is of a mobile nature and therefore the only fuel evident within the perimeter of the quarry void is during the process of refuelling.

The fuel for the face excavators and primary crusher is held and delivered via this double skinned tanker system. The operatives have been trained in best practice for refuelling of machinery and also in emergency procedures.

3.5 Decommissioning – Remediation - Restoration – Potential Continuation of Operations

It is considered that two scenarios can be reasonably expected to occur at the Site. The first is that SC and the accompanying s37L applications are not granted. In this instance, all quarrying and associated manufacturing operations at the Site would cease and the Site would be restored.

The second scenario is that SC and the accompanying S37L applications are granted. This would result in development at the Site to date becoming regularised and a continuation and extension of quarrying operations at the Site. As per Section 3.1.3, it is not intended to duplicate the s.37L application and it's associated EIAR in this document and reference should be drawn to the accompanying application for further information on this subject.

In terms of the restoration of the Site, firstly dealing with the concrete product manufacturing area, the structures can be decommissioned, with the buildings and structures being of a steel frame specification with cladding being fixed to or in to a concrete base.

The structures and plant and machinery can be dismantled and the remediation completed by the removal of the concrete yard, this would involve rock breaking the yard and removal from site. It is maintained that this remediation would be sufficient to comply with the requirements of the consents to "all plant etc. shall be removed off site and the area shall be made good".

In terms of the restoration of the quarry void, it is understood that the quarry consents provide for bench and margin treatment and planting, with placement of some overburden resources around the quarry and then for the quarry void to be allowed to flood with anticipated water rebound levels of the order of 62mAOD (+/-2m). However, the work undertaken for this remedial EIA suggests that the rebound level is more likely to be in the region of 65mAOD

(see Section 6), which is still comfortably within the quarry void. There is no apparent provision for the removal of the overburden landform that separates the quarry void from the manufacturing area.

4.0 PLANNING POLICY FRAMEWORK

4.1 Introduction

This section considers the development in the context of the following contemporary planning policy sources:

- Meath County Development Plan (2021-2027);
- Sustainable Development- A Strategy for Ireland (1997);
- National Planning Framework (2018); and
- Regional Spatial and Economic Strategy (2019).

The level of compliance with the policies and objectives outlined in these documents indicates the suitability of the development from a planning and sustainable development perspective.

4.2 Meath County Development Plan (2021-2027)

The subject site is within the County Meath Administrative Area. The Meath County Development Plan (MCDP) took effect from 3rd November 2021. The plan sets out a vision and an overall strategy for the proper planning and sustainable development of the County for a six-year period. It also sets out guiding policies and objectives for the development of the County in terms of physical growth and renewal, economic, social and cultural activity, and environmental protection and enhancement.

4.2.1 Extractive Industry Policies

Section 9.11 of the MCDP relates to the extractive industry and building materials production and states that:

"Meath County Council acknowledges the need for extractive industries in terms of supply of aggregate materials for the construction sector, delivering transport infrastructure projects, and for the export market. However, the potential for conflict in the operation of these industries with wider environmental issues needs careful consideration".

The plan goes on to state that:

"Meath contains a variety of natural resources such as building raw materials in the form of sand, gravel, stone reserves including high purity limestones and shale used in cement and magnesia manufacture and base metal deposits. The potential of these resources to underpin construction output and provide employment and economic growth in the local and regional economy is recognised as is the need to exploit such resources in an environmentally sound and sustainable manner".

The plan also states how the goal in the County in relation to the extractive industry is:

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

The development undertaken at the site is considered to accord with this goal in that it has assisted with delivering a supply of aggregate which contributes

towards growth in both the County and the wider region. As demonstrated through this rEIAR, no significant effects are considered to have occurred to date, are occurring or can reasonably be expected to occur in the future in terms of environmental, traffic and social impacts. As a result, the development is considered to accord with the County Council's goal in relation to the extractive industry.

The MCDP lists 7 policies (Policies RD POL 21- 27) which are to be considered when assessing proposals related to the extractive industry. Each of the policies are considered in turn below.

Policy RD POL 21 states:

"To ensure that projects associated with the extractive industry carry out screening for Appropriate Assessment in accordance with Article 6(3) of the E.C. Habitats Directive, where required".

The SC application includes a remedial Natura Impact Statement (rNIS). The rNIS concludes that in the light of best scientific knowledge, that there has been, are not, and will be, no significant effects, either individually or in combination with other plans or projects adversely affecting the conservation interests or conservation objectives of the River Boyne and Blackwater SAC and the River Boyne and Blackwater SPA, i.e. the integrity of these, or any other Natura 2000 sites. The development is therefore considered to accord with Policy RD POL 21 of the MCDP.

Policy RD POL 22 states:

"To facilitate the exploitation of the county's natural resources and to exercise appropriate control over the types of development taking place in areas

containing proven deposits, whilst also ensuring that such developments are carried out in a manner which would not unduly impinge on the visual amenity or environmental quality in the area".

The development site consists of an existing quarry, used for the winning and working of the Waulsortian and Lucan limestone formations with associated related industrial development linked with the working of the mineral won at the site, including a pre-cast concrete products factory, block yard and batching plant. As detailed at Section 9 of this rEIAR, the development has not resulted in any significant effects that have occurred, are occurring or can reasonably be expected to occur in terms of visual impacts. As detailed at various other sections of this report (See Water Environment; Noise; Dust; Ecology; Traffic Sections), the development has also not resulted in any significant effects that have occurred, are occurring or can reasonably be expected to occur in the future. The development is therefore considered to accord with **Policy RD POL 22** of the MCDP.

Policy RD POL 23 states:

"To support the extractive industry where it would not unduly compromise the environmental quality of the county and where detailed rehabilitation proposals are provided".

As detailed throughout this rEIAR, the development has not resulted in any significant effects which have occurred, are occurring or can reasonably be expected to occur in the future upon the environment. It can therefore be demonstrated and concluded that it has not unduly compromised the environmental quality of the county.

In terms of rehabilitation proposals, this application seeks SC in order to regularise development which has been undertaken at the site. There is no scope within the legislation to allow for future development at the site which would require planning permission, as such, the available options with regards to restoration proposals are limited. Planning permission for a continuation of operations at the Site is sought, following which the site would be fully restored. Whether SC and the accompanying 37L application is granted permission or not, the ultimate outcome will be the same in that the site will be restored in accordance with previously approved restoration proposals which will centre around the concept of allowing the quarry void to flood to create a waterbody.

The development is therefore considered to accord with **Policy RD POL 23** of the MCDP.

Policy RD POL 24 states:

"To seek to ensure that the extraction of minerals and aggregates minimise the detraction from the visual quality of the landscape and do not adversely affect the environment or adjoining existing land uses".

As detailed at Section 9 of this rEIAR, it has been demonstrated that the development has not resulted in any significant effects upon the environment in terms of impacts which have occurred, are occurring or can reasonably be expected to occur in the future by virtue of the impact upon the local landscape. It has also been demonstrated that the development has not resulted in significant effects by virtue of noise; dust or blasting. As a result, the development is considered unlikely to have resulted in any significant effects upon the local environment and adjoining, existing land uses. The

development is therefore considered to accord with **Policy RD POL 24** of the MCDP.

Policy RD POL 25 states:

"To ensure that the extractive industry and associated development minimises adverse impacts on the road network in the area and that the full cost of road improvements, including during operations and at time of closure, which are necessary to facilitate those industries are borne by the industry itself".

As detailed at Section 12 of this report, the development is not considered to have resulted in any significant effects which have occurred, are occurring or can reasonably be expected to occur in the future upon the highway network. The development is therefore considered to accord with **Policy RD POL 25** of the MCDP.

Policy RD POL 26 states:

"To ensure that all existing workings shall be rehabilitated to suitable land uses and that all future extraction activities will allow for the rehabilitation of pits and proper land use management. The biodiversity value of the site should be considered in the first instance when preparing restoration plans. Where land filling is proposed, inert material is the preferred method. Each planning application shall be considered on a case by case basis and where relevant will be dealt with under the relevant regional Waste Management Plan".

As detailed in Section 9 of this report, the application site will be restored in accordance with the previously approved proposed restoration concept for the site whereby the quarry void will be allowed to fill with water to form a waterbody. Given that this approach has been previously assessed as part of

previous EIA's and approved, the approach is considered acceptable and the development is therefore considered to accord with **Policy RD POL 26** of the MCDP.

Policy RD POL 27 states:

"To ensure that development for aggregates / mineral extraction, processing and associated processes does not significantly impact in the following areas:

i. *Existing & Proposed Special Areas of Conservation (SACs);*
ii. *Special Protection Areas (SPAs);*
iii. *Natural Heritage Areas and Proposed Natural Heritage Areas;*
iv. *Other areas of importance for the conservation of flora and fauna;*
v. *Areas of significant archaeological potential;*
vi. *In the vicinity of a recorded monument, and;*
vii. *Sensitive landscapes*
viii. *World Heritage Sites".*

As demonstrated in the Ecology, Archaeology and Landscape and Visual Sections of this report and the accompanying rNIS, the development is not considered to have given rise to any unacceptable impacts upon any of the designations identified above. As a result, the development is considered to accord with **Policy RD POL 27** of the MCDP.

4.2.2 Economic Development Policies

The MCDP includes a range of other policies which are considered relevant to the development. A summary of the policies and a brief analysis of each is provided below.

The "ED POL" policies of the MCDP relate to economic development in the County. The policies set out the economic vision for the County for the plan period and seek to support economic development and job creation. The policies and objectives have been developed cognisant of the forthcoming economic challenges that the County is expected to face during the Plan period.

The existing operations (stone, powders and fill; Precast and concrete block manufacture) at Tromman provide direct employment for some 140 staff and a further 40 full-time sub-contractors. Keegan Quarries, therefore makes a significant contribution to the rural Meath economy and provides a highly skilled workforce.

A significant amount of the Company's total revenue stream is now derived from export sales to the UK, bringing external revenue into the Meath Economy. Such is the importance of the export market that the recent growth and expansion in the business, has seen internal investment focussed on satisfying the demands of this area.

The development at the site has been necessary in order to sustain employment growth at the site and allow for the continued supply of mineral and manufacturing of products associated with the extraction of the mineral won at the site.

Given the significant economic benefits associated with the site, the development is considered to accord with the economic development policies of the MCDP, insofar as applicable to the development project.

4.2.3 Community Building Strategy

Section 7 of the MCDP states that the creation of healthy, socially inclusive communities is a cross cutting theme of the Development Plan. The plan seeks to promote social inclusion with the development of sustainable communities with good quality public realm, access to housing, community facilities and public transport.

The policies are not considered to be of any direct relevance to the development, other than to note that the delivery of all the above-named infrastructure is dependent upon an adequate supply of aggregate, to be used either directly in construction or indirectly via the products (e.g. precast concrete and blocks) manufactured from the mineral. The Applicant's quarry has been a key supplier of aggregate and value-added products, which has indirectly supported the delivery of the social infrastructure described above.

4.2.4 Movement Strategy

Section 5 of the MCDP relates to transportation. The plan states that the maintenance and delivery of an efficient, integrated and coherent transport network in line with national and regional policy is fundamental to the future economic, social and physical development of the County.

The policies seek to promote sustainable development through walking, cycling and public transport and allow for the efficient movement of goods and people. The policies also seek to promote road and traffic safety; carry

out improvements when required and address traffic problems where they arise.

As detailed in the Traffic Section of this rEIAR, HGV movements from the site have been previously assessed and subsequently permitted. The development has been demonstrated to not have result in any significant effects which have occurred, are occurring or can reasonably be expected to occur in the future by virtue of highway traffic or safety. The site has utilised an approved access and adequate car parking is available for staff and visitors within the site.

The development is therefore considered to accord with the movement strategy contained within the MCDP insofar as applicable to the development.

4.2.5 Infrastructure Strategy

Section 6 of the MCDP describes how the sustainable future socio- economic growth of the County is dependent on the provision of the required water and wastewater infrastructure and ensuring high-quality reliable service provision. Policies contained within Section relate to the protection of water resources, management of flood risk and consideration of climate change.

As demonstrated at the Water Environment section of this rEIAR (Section 6), the development has not resulted in any significant effects upon the ground or surface water environments with the management systems in place to control drainage and flood risk at the site. Impacts upon climate change have been considered at Section 16, with it concluded that the development has not significantly contributed to impacts associated with climate change.

The development is therefore considered to accord with the movement strategy contained within the MCDP insofar as applicable to the development.

4.2.6 Cultural and Natural Heritage Strategy

The MCDP seeks to identify, protect, conserve and manage the cultural and natural heritage of the County and to encourage its sensitive integration into the sustainable development of the County for the benefit of present and future generations.

As detailed in the Landscape and Visual Section of this rEIAR (Section 9), the development has been assessed from sensitive receptors within the local vicinity. The section describes how the development has not resulted in any significant effects which have occurred, are occurring or can reasonably be expected to occur in the future in terms of the landscape setting and views from surrounding sensitive receptors.

The Cultural Heritage section of this report also demonstrates that the development has not given rise to any unacceptable impacts upon any designated heritage assets. The section details how the archaeological potential of the site has been assessed previously as part of various EIA's.

Given the above, the development is considered to accord with the cultural and natural heritage strategy of the MCDP insofar as applicable to the development.

4.2.7 Rural Development Strategy

Section 9 of the MCDP seeks to encourage the continued sustainable development of rural communities without compromising the physical, environmental, natural and heritage resources of the County. Many of the policies in this section of the MCDP relate to rural housing and agriculture and are therefore of no relevance to the development. Section 9 of the MCDP also includes the extractive industry policies as discussed earlier in this section, and therefore are not repeated here.

Given the above, the development is considered to accord with the rural development strategy of the MCDP insofar as applicable to the development.

4.2.8 Climate Change Strategy

Section 10 of the MCDP set out the climate change strategy for the county and seeks to reduce emissions and improve climate change resilience. As detailed at Section 16, the development is not considered to have resulted in any significant effects upon the environment in terms of climate change.

Given the above, the development is considered to accord with the climate change strategy of the MCDP insofar as applicable to the development.

4.2.9 Development Management Guidelines and Standards

The MCDP at Section 11.6.9 states that:

"The Council recognises the contribution of the extractive industry in supporting jobs in the construction and aggregates section of the County".

MD OBJ 64 of the MDCP lists a number of criteria which it states all applications for extractive industry development should comprehensively address.

As demonstrated throughout this report and the SC application as a whole, all of the criteria listed have been sufficiently assessed insofar as possible for a SC application. The overall conclusion of the rEIAR is that the development has not resulted in any significant effects upon the environment which have occurred, are occurring or can reasonably be expected to occur in the future.

As summarised throughout this section, the development has been demonstrated to accord with the provisions of the MCDP 2021-2027.

4.3 Sustainable Development- A Strategy for Ireland (1997)

The principle of sustainable development is now a fundamental tenet of land use planning policy in Ireland. The document 'Sustainable Development – A Strategy for Ireland', published by the Department of the Environment in 1997 contains a framework for applying the principles of sustainable development to different sectors of the economy.

The general principle of sustainable development has also been enshrined in the Planning and Development Act 2000 (as amended) and in County Development Plans prepared in recent years, including the MCDP.

In this context, the development has been influenced by these policies and has sought to provide an appropriate methodology to maximise the exploitation of local resources.

There are several sections and policy recommendations outlined in the Sustainable Development Plan which are reviewed in the context of the proposal, as set out below.

The 'Strategic Framework' section outlined in the plan attempts to put in context perceived incongruities whereby on the one hand, there is a fundamental requirement to meet the present day needs in a sustainable way while on the other hand equally ensuring equity in access to, and use of resources, as well as equitable opportunities to participate in decision-making processes all with an overriding goal to achieve economic and social progress.

Within the *priorities for action* identified within the Strategic Framework are:

- a balance between the conservation and utilisation of resources;
- concrete action on the basis of practical programmes and clear targets and;
- an ability to measure and monitor sustainable development performance.

Accordingly, the Government's priorities within the framework of the Strategy are to:

- undertake a high level of environmental protection so that renewable resources are conserved and not depleted beyond their renewable rates;
- ensure that non-renewable resources are used prudently and efficiently with a strong emphasis on the use of substitute resources, where practicable
- and the concentration of critical natural capital on the needs of the future;

The Environment and Economic Development Chapter of the strategy quotes:

"*Ireland should replace the traditional adversarial approach that presents industrial development and environmental protection as opposites. The new approach should simultaneously maintain high environmental quality and promote a competitive enterprise sector*" - Forfas, Shaping our Future.

The Extractive Industries section accepts that quarrying for stone, gravel, sand, crushed rock, etc is based on an ultimately finite resource, stating that products are used mainly in the construction industry, both as crushed rock and for the production of cement. The strategy also notes that ground limestone is also used in agriculture.

The strategy goes on to state that whist in principle raw materials for the quarrying industry are not in short supply, the environmental impacts, require greater consideration. In certain cases, demand for aggregates for use by the construction industry could be met in some degree by recycling and reuse of construction/demolition waste.

It should be noted that due to irregular supply patterns and inconsistencies in material quality, recycled aggregate materials are often not suitable for a range of uses. As detailed earlier in this report, the mineral extracted at the quarry at Tromman is a high purity limestone, therefore replacing the mineral with recycled aggregate would not achieve the same high grade product which is required to produce the products manufactured at the site.

Given the above, the development is considered to accord with the provisions of the Sustainable Development Strategy for Ireland.

4.4 National Planning Framework, 2018

The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of the country to the year 2040.

The NPF describes how extractive industries are important for the supply of aggregates and construction materials and minerals to a variety of sectors, for both domestic requirements and for export. The planning process will play a key role in realising the potential of the extractive industries sector by identifying and protecting important reserves of aggregates and minerals from development that might prejudice their utilisation.

The NPF goes on to state that aggregates and minerals extraction will continue to be enabled where this is compatible with the protection of the environment in terms of air and water quality, natural and cultural heritage, the quality of life of residents in the vicinity, and provides for appropriate site rehabilitation.

National Policy Objective 23 seeks to:

"Facilitate the development of the rural economy through supporting a sustainable and economically efficient agricultural and food sector, together with forestry, fishing and aquaculture, energy and extractive industries, the bio-economy and diversification into alternative on-farm and off-farm activities, while at the same time noting the importance of maintaining and protecting the natural landscape and built heritage which are vital to rural tourism".

In terms of rural development, the NPF describes how the spatial, social and economic disparities between rural areas are a reflection of the fact that stronger rural areas tend to be located in a geographically advantageous place, and also have the human and social capital to address their needs and respond effectively to emerging opportunities and strategies.

The application site is considered to be strategically well placed in order to serve a variety of markets across Ireland, including the local market and that of the Greater Dublin Area. The site also benefits from a good human and social capital, as demonstrated by the current operations at the quarry.

National Policy Objective 15 is to:

"Support the sustainable development of rural areas by encouraging growth and arresting decline in areas that have experienced low population growth or decline in recent decades and by managing the growth of areas that are under strong urban influence to avoid over-development, while sustaining vibrant rural communities".

The development has contributed towards achieving sustainable growth in a rural location and sustaining vibrant local communities within Meath.

Given the above, the development is considered to accord with the provisions of the National Planning Framework.

4.5 Regional Spatial and Economic Strategy 2019-2031

A Regional Spatial and Economic Strategy (RSES) is a strategic plan and investment framework to shape future growth and to better manage regional

planning and economic development throughout the Eastern & Midland Region.

The aim of the RSES is:

"To create a sustainable and competitive Region that supports the health and wellbeing of our people and places, from urban to rural, with access to quality housing, travel and employment opportunities for all".

The RSES describes how the Eastern and Midland Region is the primary economic engine of the state providing more than 1 million jobs. The main settlement is the capital city of Dublin, which is home to 1.2 million people and is supported by a network of regional and county towns and an extensive rural hinterland.

The RSES also describes how the region contains some of the fastest growing communities in the Country which increases demand for housing, infrastructure and services in those areas.

The existing site at Tromman is located some 20km from the towns of Navan and Maynooth. Significant economic importance is placed upon both of the identified towns in the RSES. These towns are identified as large economically active service and/or county towns that provide employment for their surrounding areas and with high-quality transport links and the capacity to act as growth drivers to complement the Regional Growth Centres.

Direct access to both towns is available via regional roads. Given the quarry's geographical location and resource quality, the site can be viewed as significant regional influence both in terms of sustaining the role of Dublin as the main metropolitan area within the region, but also sustaining the role and

function of the identified towns, supporting the growth patterns for each as envisaged with the RSES.

Development at the site has been complementary to the designations of Navan and Maynooth as 'Key Towns' and Dublin and the surrounding core region, through its role as an important generator of affordable and sustainable building materials. The site has experienced significant employment growth over the previous years, sustaining employment in the local area, with knock-on impacts in terms of local expenditure in the towns and wider region.

Given the above, the site is considered to assist in achieving the aims of the RSES through the supply of building materials throughout the region and employment in the local area. The development is therefore considered compliant with the RSES insofar as applicable to the development.

4.6 Planning Policy Summary and Conclusions

The subject site is within the Meath County administrative area. The Meath County Development Plan (2021-2027) is the current statutory Development Plan for the area. As demonstrated at Section 4.2, the development is considered to accord with the policies of the County Development Plan, insofar as applicable.

The development has allowed for the significant economic and social benefits generated by the site in terms of employment, investment and prosperity to be sustained without posing an unacceptable impact upon the environment, as detailed within this rEIAR. The development has complemented the role of nearby key towns, and the role of Dublin as the main international gateway to Ireland.

The products manufactured at the site and aggregates produced have supported economic growth across the Dublin and mid-east region.

The development has been demonstrated to accord with the relevant local, regional and national planning policy provisions. The development has maximised the potential of the finite natural resource found at the site without posing an unacceptable impact upon the environment and as such, the development is considered to accord with the three dimensions of sustainable development and therefore is in accordance with the proper planning and sustainable development of the area.

5.0 GEOLOGICAL ASSESSMENT

This geological review section has previously been prepared by Mike Williams BSc, MSc, FGS, MIQ, C.Geol, EurGeol. The original rEIAR chapter was prepared in 2018 to accompany the previous the application for SC (Ref LS. 303334). Given that the geology environment does not change in the intervening period, it is not considered necessary to re-explore the previous geological conclusions. Instead, the section has been reviewed by Chris Tinsley MRTPI of Quarryplan and updated where necessary in order to allow for a contemporary assessment.

As a Senior Engineering Geologist with QuarryDesign Mike Williams has an Integrated Masters in Geology from the University of Leicester and a Master of Science in Mining Engineering from Camborne School of Mines (University of Exeter). He is a Chartered Geologist and Fellow of The Geological Society of London. He was previously employed by Aggregate Industries where he was responsible for quarrying processes from drilling and blasting through to crushing and screening. He has also spent three years as an Exploration Geologist working in the Afar Desert in Ethiopia.

5.1 Site visit

The site was visited on the 29th October 2018 and an inspection of the site was undertaken to gain an appreciation of the geological and geotechnical aspects of the quarry. Visually, there was little of concern with the geotechnics.

5.2 Geology

The area around Keegan's Tromman Quarry has been mapped by the Geological Survey of Ireland at a scale of 1:100,000 (Figure 5.1). The mapping indicates that the site is split across two formations; the Lucan and Waulsortian Limestone formations, with the quarry activities having operated almost exclusively within the more recent Lucan Formation, which were deposited during the Carboniferous period.

However, previous work undertaken by Minerex Environmental Limited in support of application TA900976 and the associated EIS stated that although the:

"bedrock mapping compiled by the GSI, the active quarry area is underlain by Waulsortian Limestones in the northwest and the Lucan Formation in the southeast.

The Waulsortian Limestones are generally pale grey, poorly bedded pure limestone with distinctive cavity structures. The Lucan Formation comprises dark grey, well bedded, cherty limestones and calcareous shales.

Based on field observations, the active quarry, including the proposed extension area, is considered to be underlain by the Waulsortian Limestones and not the Lucan Formation as published. The Waulsortian Limestones in the active quarry area were observed to contain cavities and weathering features synonymous with karstification, particularly in the current lower bench."

This assessment reflected the author's assessment of the resources on site and it is considered that the site operates within the Waulsortian Limestone formation. Waulsortian limestone typically comprises pale-grey and very fine-grained carbonates, which display mudstone to wackestone depositional textures. The pale colouration reflects the relative purity of the carbonate matrix, which contains very little to no argillite and is essentially composed of lime mud. The strata at site generally dips at a low angle to the west, although can be locally steep.

The geological mapping of the area indicates that the Waulsortian Limestone around Tromman Quarry is an outlier whereas the surrounding Lucan Formation was deposited more recently.

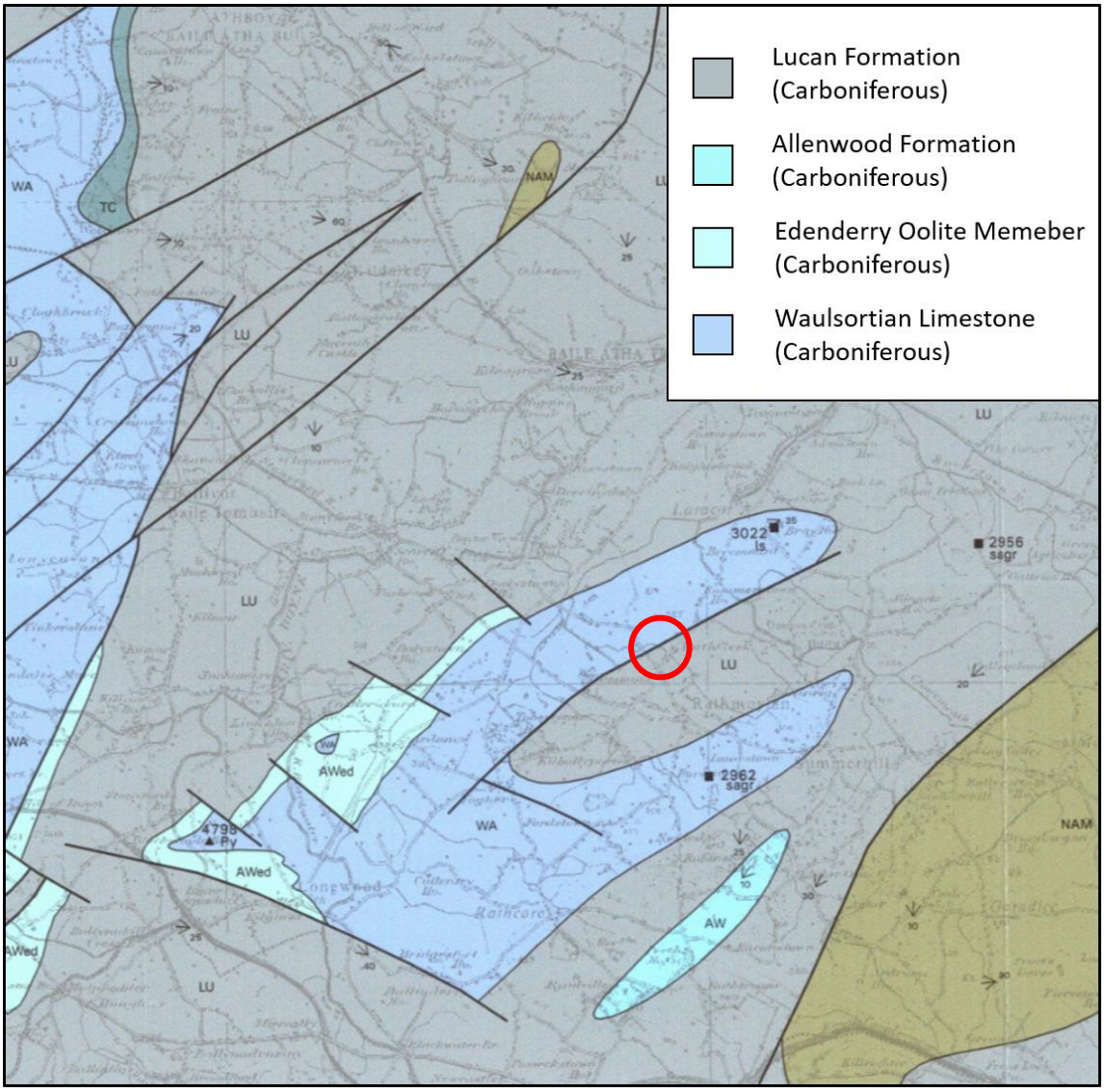

Figure 5.1: Geology of Meath (Sheet 13) 1:100,000 scale (not to scale). Solid Geology of area around Tromman Quarry, published by the Geological Survey of Ireland.

5.3 Geological Impacts

5.3.1 Concrete Manufacturing Impacts

Precast manufacturing structure and ancillary developments have been installed in the northern margin of the site since 2013. The addition of these structures is not considered to have had a negative impact on the geology of the area as any geological structure is now effectively covered by manmade development, preventing removal of the same and therefore affording protection.

5.3.2 Quarrying Impacts

Quarrying of aggregate material, by definition, requires the excavation and removal of the rock deposit, thereby producing a permanent impact on the local bedrock environment within the quarry footprint. Analysis of these impacts, with reference to the baseline outlined in Sections 2 and 3 of this report with respect to the production of a rEIAR are as follows:

Impacts that have occurred

Comprises the removal of surface soils, overburden and the target mineral. This has been undertaken under a variety of development consents and assessed against the appropriate European Legislation, with the period of consent concluding on the 4th August 2018.

Impacts occurring

References the ongoing operations at the site, as evidenced from the topographic survey from the site, undertaken in August 2023. Apart from the local extraction of limestone, it is unlikely that this has affected the surrounding geology of the area.

Impacts that can reasonably be expected to occur

Under the two potential scenarios considered within the rEIAR as being reasonable to expect to occur, the first considers the cessation of extraction operations and the restoration of the site in accordance with the two recently lapsed extraction consents. This will see no impact upon the geological resource.

The ultimate development, to be considered under s.37L, will result in the permanent removal of additional volumes of the target mineral. This scenario has been assessed within the accompanying EIAR for the S37L application and it is not necessary to repeat the findings here, except to say that the EIAR concludes that the proposed continuation/ future working would not arise in any significant effects upon the environment in terms of geological or geotechnical impacts.

During future extraction, the Geological Survey of Ireland will be notified of any significant rock exposure that will enhance the geological understanding of the area. Any continued quarrying will continue to take place in accordance with legislative requirements and best practice standards.

5.4 Conclusion

Quarrying, by definition, requires the excavation and removal of the mineral deposit, thereby producing a permanent impact on the local bedrock environment. It is considered that the scale of mineral extraction post August 2018 is considered to have had a limited impact only, and at a local level, on the geological environment.

Furthermore, by the nature of quarrying activities, geotechnical impacts will always be possible, however there has not been any failures or other geotechnical-related incidents reported at the quarry.

The rate of extraction ay the quarry has matched historic levels and the quarry is being worked in accordance relevant legislation. The quarry is the subject to a bi-annual Geo-Technical Assessment as required by the Safety, Health and Welfare at Work (Quarries) Regulations 2008 to monitor geotechnical aspects of the quarry and ensure compliance with the regulations and continued best practice.

Given the above, the impacts which have occurred, are occurring and are reasonably expected to occur are not considered to have resulted/ be resulting in any significant effects upon the environment.

6.0 WATER ENVIRONMENT

6.1 Introduction

A Hydrological and Hydrogeological Impact Assessment (H&HIA) for the development has been prepared by BCL Hydro and is held at Appendix 6.1.

The H&HIA takes into account the environmental information that (i) has been considered previously by the Planning Authority and the Board and (ii) has been considered to be representative and acceptable information to provide an accurate environmental baseline for the site.

This is an appropriate approach to avoid unnecessary duplication of information and is recommended by regulation 222A of the Planning and Development Regulations 2001 (as amended).

The assessment was undertaken by Henry Lister who holds a Batchelor of Science Honours Degree [Geology] conferred by Plymouth University, 1992; and a Master of Science Degree [Groundwater Engineering] conferred by the University of Newcastle upon Tyne, 1994. BCL has provided specialist services and advice to the extractive industry since 2000.

BCL's work has included:

- Water environment impact assessments: typically to examine lowering of groundwater levels, potential impact upon surface water features, risk of derogation of water supplies & water quality;
- Data collation and interpretation (meteorological, geological, hydrological and hydrogeological);
- Conceptualisation of hydrogeological systems;

- Impact prediction and modelling;
- Formulation of mitigation measures (appropriate, practical and cost-effective);
- Management and undertaking of operational impact monitoring and impact assessment;
- Review and auditing of contingency mitigation schemes;
- Liaison with project team, planning authorities, regulatory agencies and general public;
- Design of Water management schemes: Rainfall runoff and storm event calculations; Sizing of settlement lagoons and storm attenuation ponds;
- Applications for Abstraction Licences and Discharge Consents;
- Prognosis, design, installation and test pumping of abstraction boreholes;
- Involvement with research project, completed in association with Capita Symonds, on behalf of the Minerals Industry Research Organisation and Environment Agency: Optimising the Use of Artificial Recharge Features to Mitigate the Impacts of Quarry Dewatering; Including a programme of dewatering & pump tests to trial various configurations of recharge trench, soakaway and compensation pond; and
- Reporting in connection with proposed developments within varying hydrogeological terrains at over 225-no. quarries throughout Ireland and the UK.

6.2 Baseline Conditions

The Site is not covered under any statutory nature conservation designations. The closest section of the River Boyne & River Blackwater SAC-SPA is at 950 m standoff to the northwest of the Applicant's quarry; they are separated by the neighbouring Kilsaran Quarry.

Mapping published by the EPA has been consulted to check for IPPC (Integrated Pollution Prevention Control), IPC (Integrated Pollution Control), IEL (Industrial Emissions Licensing) facilities in the vicinity of the Application Area. There are no landfill sites within 5 km radius of the Application Area. The closest is Basketstown Landfill Facility, near Summerhill, which is about 7.2 km to the east of the Quarry.

The Applicant's consented discharge point is at the northern end of the Site, as covered by Trade Effluent Discharge Licence Ref. 04/2. The trade effluent is directed into a drainage ditch, which flows northwest to join Rathmolyon Stream. The closest third-party Section 4 Discharge is at Kilsaran Quarry; the discharge point, which goes directly into Rathmolyon Stream, is approximately 500 m downstream from the Applicant's outfall.

The average annual rainfall (for the period 1981 to 2010) is *circa* 845 millimetres per year (mm/yr). Corrected for evapotranspiration, the effective rainfall rate is calculated to be 441 mm/yr. Total rainfall occurring on Site during the design storm (6-hour duration and 100-year return period) is 55.8 mm. This data is taken from Met Éireann's Depth Duration Frequency (DDF) Model.

The Rathmolyon Stream flows from east to northwest, passing 150 m standoff to the north of the Site and then running alongside the northern boundary of Kilsaran's quarry. Some 550 m downstream from the northwest limit of Kilsaran's quarry, the stream turns to the north and follows this direction to its confluence with the Knightsbrook River (5- 6 km downstream from the Site) and onwards to the River Boyne, as shown in Figure 6.1 below.

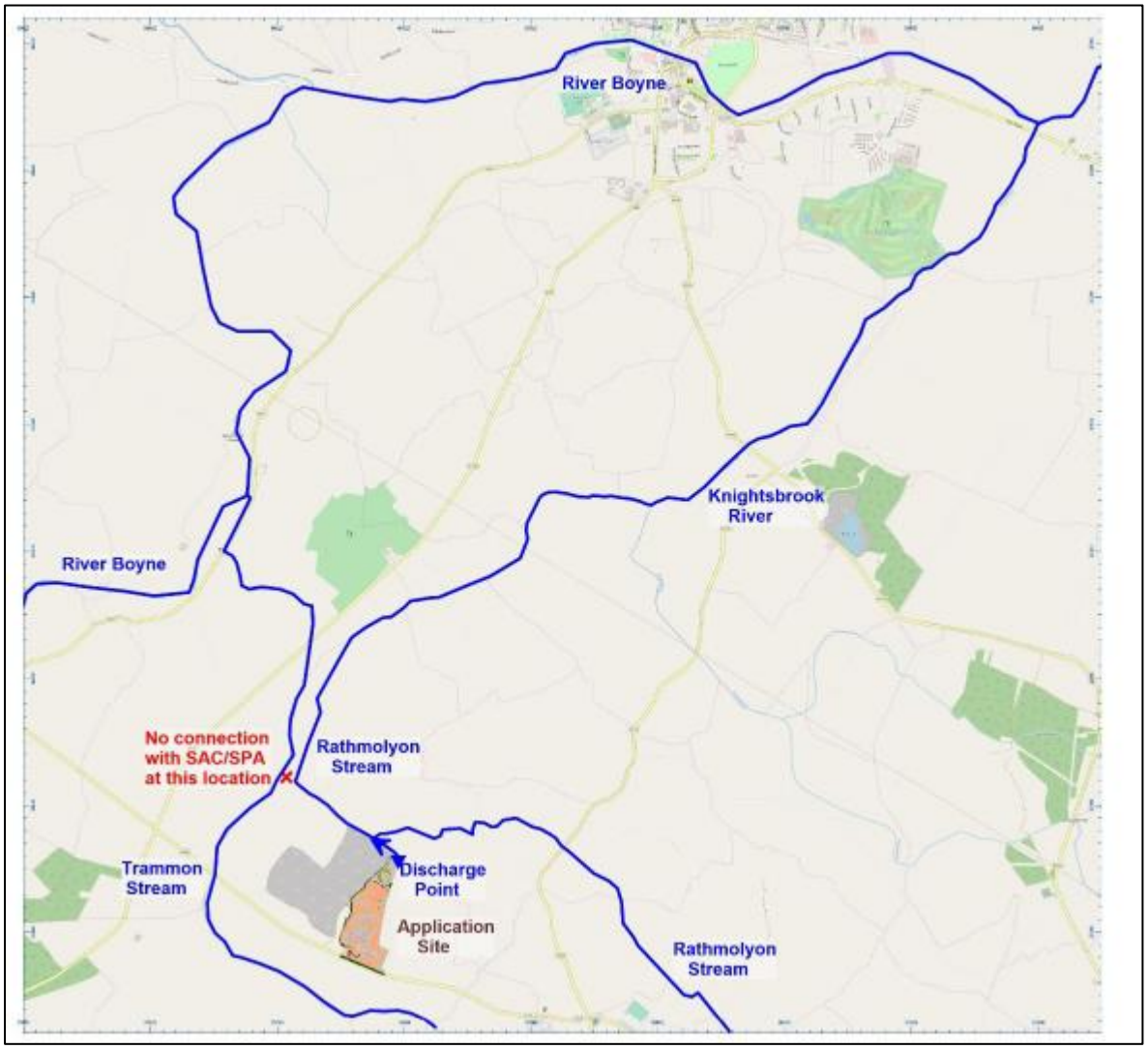

Figure 6.1 Local Surface Watercourse Network

At the opposite/southern end of the Site, the land drops away gently towards a second watercourse, Tromman Stream.

Tromman Stream passes 400 m to the south of the Application Area, at closest approach. The watercourse makes a very gentle descent westwards then northwards, maintaining 400-450 m standoff from the quarries. As it passes to the northwest of Kilsaran's quarry, it enters the uppermost section of the River Boyne & River Blackwater SAC-SPA.

The protected section of the Tromman Stream is some 950 m standoff to the northwest of the Applicant's quarry. At this point, the two streams (Tromman and Rathmolyon) run parallel to each other, separated by a strip of farmland (less than 100 m in width). This stretch of the Rathmolyon Stream was inspected during BCL's water features survey; there was no evidence of any connection between the two watercourses.

Likewise, SLR Consulting Ireland inspected the same two streams in 2017 and reported that "there is no surface water connection between the two". Please refer to the following documents: Planning application seeking permission for continued use of the previously permitted development at Castletown Quarry (Kilsaran Concrete), TA-170519, May 2017, EIS including "Surface Water and Groundwater" (Chapter 6) completed by SLR Consulting Ireland. First Party Appeal of Conditions 2 & 36, SLR. Dated April 2018.

Furthermore, please refer to An Bord Pleanála (ABP) report, reference number 17.QV.0182:

(j) the apparent error made by the planning authority's advisors with respect to the existence of a proximate hydrological link between the receiving waters of the surface and ground waters discharged from the site and the nearby River Boyne and River Blackwater Special Area of Conservation, site code 002299, (no such link exists),

(k) the actual hydrological distance to the River Boyne and River Blackwater Special Area of Conservation, site code 002299, which is in excess of nine kilometres from the site,

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The Office for Public Works (OPW) flood mapping provides further confirmation that there is no surface water link between the Rathmolyon Stream and the Tromman Stream (http://www.floodinfo.ie/map/floodmaps/).

On this basis, the evidence presented above is in conflict with Point 7.3.2 in the Inspector's Report ABP-303334-19, dated 14th March 2019. It is argued that Point 7.3.2 should be withdrawn from the ABP report, as it is a misrepresentation.

Throughout the SC period, the exact location of quarry sumps has depended upon the configuration of the quarry floor and the position of the working face during each phase of the development; at present day, the secondary sump is 15 m to the east of the primary sump.

After initial settlement for suspended solids within these sumps on the quarry floor, the ingress water is pumped up to the drainage infrastructure (seven-stage settlement tanks) at the northern end of the landholding. Four of the settlement tanks are sited to the east of the overburden storage area; and the final three tanks are situated alongside
the southeast corner of the pre-cast manufacturing structure. The tanks have a total surface area of 422 m2 and they provide a storage volume of 1,324 m3. The water is discharged from these tanks into a concrete culvert which incorporates a V-Notch weir, fitted with a data logger that has been in operation since 8th April 2019, taking head measurements every 15 minutes. The culvert connects with an open drainage channel leading to the consented discharge point.

The ongoing hydrometric monitoring programme at the Site includes measurement of groundwater levels on a quarterly basis at the locations highlighted in Figure 6.2 overleaf.

The groundwater level readings collected from March 2019 (with the sump at 27 maOD) to November 2023 (with the sump at 15-16 maOD) have been compared with historic data, collected in July-August 2003 (with the sump at 52 maOD) and March 2009 (with the sump at 36 maOD). The results are presented as a series of hydrographs included within the H&HIA.

The ongoing hydrometric monitoring programme at the Site currently includes the following commitments:

- Stage measurements by data logger (15-minute interval) at the V-Notch weir leading to the Consented Discharge Point (Trade Effluent Discharge Licence Ref. 04/2). For the monitoring period 8th April 2019 to 14th November 2023, the average daily rate equates to 1,335 m3/day, with a standard deviation of 640 m3/day;
- Measurement of groundwater levels on a quarterly basis at Site Piezometers;
- Measurement of groundwater levels on a quarterly basis at Domestic properties; and,
- Water sampling at A number of locations at the quarry and neighbouring properties with the samples will be subject to laboratory analysis.

Figure 6.2 Groundwater Monitoring Locations

6.3 Impact Assessment

Published guidance, which details the criteria for ranking the importance of hydrological and hydrogeological features (low / medium / high / very high / extreme) and assessing the magnitude of impact (negligible / small /

moderate / large adverse), has allowed for judging the significance of impact (imperceptible / slight / moderate / significant / profound).

6.3.1 Impacts that have occurred

Looking at the cumulative cone of depression that has developed at the existing quarry complex (*i.e.* the Applicant's quarry and Kilsaran Quarry, taken together), the bulk of the drawdown is considered to have been established between 2003 and 2009 *i.e.* during previous phases of quarrying, when working the upper benches ("the majority of groundwater flow will occur in the upper 10 m, comprising a weathered zone of a few metres and a connected fractured zone below this").

Total rainfall occurring on Site during the design storm (6-hour duration and 100-year return period) is 55.8 mm. Given the catchment area of the development (circa 22.5 hectares), this equates to some 12,555 m3 input of rainfall.

Since commencement of unauthorised activities, all ingress water would have drained under gravity into the primary sump, which has a volume of approximately 27,000 m3 i.e. with sufficient capacity for the design storm. There is no record or indication of overtopping/ runoff during the assessment period; and therefore storm balancing is considered to have been adequate over this period.

Since commencement of unauthorised activities, all ingress waters (groundwater and rainfall runoff) at the Applicant's landholding have been directed through settlement tanks and discharged into the ditch at the consented discharge point.

Water samples have been collected from the discharge point on a regular basis and submitted for laboratory analysis in order to check for compliance with the limits specified in the consent. As shown in the Discharge Effluent Quality Reports, there has been broad compliance with prescribed standards over the assessment period. This suggests that drainage arrangements and settlement infrastructure at the Site over the assessment period have been adequate.

The operation of mobile and fixed plant presents a risk that pollutants may enter groundwater as a result of hydrocarbon spillage or leakage on Site. Such sources are identified as fuel, lubricating and hydraulic oils. There are no reports or evidence of significant spillages during the assessment period.

A brief qualitative assessment would highlight the following improvements:

- The rate of runoff from the rooftop is throttled by the gutters and downpipes, thus improving the overall attenuation capacity of the water management system; and,
- Runoff from the rooftop is less likely to mobilise suspended solids compared with drainage from the floor of the yard.

As such, the development of the elements in the concrete manufacturing part of the Site is not considered to have resulted in any impacts.

6.3.2 Impacts that are occurring

The current radius of influence (based upon actual observed distance-drawdown readings) is shown to equate to *circa* 510 m. This is the cumulative impact of the two existing quarries.

The radius of influence of dewatering drawdown at present day is calculated to be around 255 m (taking the Applicant's quarry in isolation). This is doubled to 510 m to allow for the cumulative impact of Tromman and Kilsaran Quarries. As above, the magnitude of impact on the Hydrogeology Attribute is 'Small Adverse', therefore the significance of impact is within acceptable range, being rated as 'Slight'.

The overall surface area of the primary, secondary and tertiary settlement system equates to 3,347 m2. The settlement area (3,347 m2) exceeds present day requirements; and therefore, in combination with the most recent Discharge Effluent Quality Reports, the system is shown to be adequate in continuing to meet the current discharge standards/ emission limit values (EPA, 2006); and therefore no adverse impacts are currently occurring.

No accidents/ spillages are reported to have occurred; and the quarry has operated in accordance with handling procedures.

6.3.3 Impacts that can reasonably be expected to occur

In the scenario were this SC application and the accompanying s37L application is granted, the cumulative radius of influence would be expected to increase to 550 m. The Waulsortian Limestone belongs to the Longwood Groundwater Body (GWB), which covers an area of 50 km2. Thus, the development has only involved the removal of a small proportion of aquifer, with minor change to the extant configuration of the aquifer (bearing in mind that the unsaturated zone has already been removed by the preexisting development).

Throughout the operational life of the development ("*Scenario 2*"), the Applicant would continue to check groundwater level in Site piezometers and third-party boreholes on a quarterly basis, subject to agreeing access arrangements. This would provide early warning in the event that any 3rd party borehole should show signs of an unacceptable decline in yield. To date, the owners of the boreholes nearby who continue to allow access, have not reported any issue with required yield despite the specified drawdown.

Given the above factors, the magnitude of impact on the Hydrogeology Attribute is 'Small Adverse', therefore the significance of impact is within acceptable range, being rated as 'Slight'.

A full assessment of this scenario is included within the accompanying S37L application.

In the alternative scenario whereby the site is restored and remediated, water would not be discharged off Site. The structures and plant and machinery would be dismantled, and the remediation completed by the removal of the concrete yard; this would involve rock breaking the yard and removal from Site. It is maintained that this remediation would be sufficient
to comply with the requirements of the consents to "all plant etc. shall be removed off Site and the area shall be made good." The remediation and restoration are not considered likely to result in any adverse impacts

Water levels would rebound in the 3rd-party supplies, returning close to what would have been seen pre-development; and therefore there would be no potential for adverse impacts.

6.3.4 Rathmolyon and Tromman Streams

In terms of potential hydrological receptors, there is no hydraulic continuity between the groundwater in the bedrock as encountered at the quarry, and the Tromman Stream. Therefore, with respect to the Tromman Stream and associated SAC, no impacts "Have occurred", "Are occurring" and no impacts are "Reasonably expected to occur" due to the drawdown of the groundwater table in the limestone bedrock at depth.

Any drawdown-related impact upon Rathmolyon Stream is counterbalanced by the consented discharge process, whereby water from the quarry sump is directed into the at-risk section of stream in accordance with the Discharge Licence. This applies when considering impacts that "Have occurred", "Are occurring" and are "Reasonably expected to occur".

6.4 Mitigation Measures

Given the Subject to the continuation of the control measures specified in this report (*e.g.* ongoing monitoring of water quality and levels, provision and maintenance of the settlement system, continued adherence to fuel handling protocols *etc*), it is considered that no adverse impacts have occurred or are occurring.

6.5 Conclusions

The H&HIA held at Appendix 6.1 presents the findings of the Baseline Study and Impact Assessment that is intended to inform consultations both prior to submission of the SC Planning Application and during its determination.

The collection and interpretation of baseline data has facilitated a detailed understanding of the nature of, and interactions between, the groundwater and surface water systems operating in and around the Site.

In view of the findings of assessment, the current approach to development at the quarry and the planned approach to future development, which includes specific measures for the continued protection of the water environment, there are considered to be no over-riding hydrogeological or hydrological reasons for not granting SC.

7.0 NOISE VIBRATION AND BLASTING

7.1 Introduction

This remedial Noise & Vibration Impact Assessment has been prepared to accompany an application for SC at Keegan Quarries Ltd., Tromman, Rathmolyon, Co. Meath and forms part of the rEIAR. The Figures 7.2 to 7.4 as referenced throughout this Section are held as Appendix 7.1.

The Noise & Vibration Impact Assessment has considered the totality of the operational site to include both permitted and unauthorised structures and the existing quarrying operations previously permitted and extended to the 5th August 2018.

This report has been prepared by Mervyn Keegan. Mervyn Keegan is a Director of the environmental consultancy, AONA Environmental Consulting Ltd. Mervyn Keegan's areas of professional expertise are in Noise Control & Acoustics and Air Quality & Odour consultancy, including impact assessment and mitigation design. Mervyn Keegan has over 20 years of environmental consultancy experience. Mervyn is a full member of the Institute of Acoustics, with a Bachelor of Science Degree (Applied Sciences), a Master of Science Degree (Environmental Science) and a Diploma in Acoustics in Noise Control. AONA Environmental Consulting Ltd. is an independent consultancy specialising in Environmental Impact Assessment and Licensing. Mervyn Keegan has prepared in excess of ten Noise & Vibration and Air Quality & Climate impact assessments per annum for quarry developments in the Republic of Ireland, Northern Ireland and the UK in the last 15 years and is an expert in the awareness and understanding of the relevant legislation and

guidance that pertains to best practise in such assessments. Mervyn Keegan has appeared as an Expert Witness at oral hearings, public inquiries and legal hearings. Mervyn Keegan has produced Noise, Air Quality & Odour Impact Assessment reports to assess the impacts of a range of development types including roads, residential developments, industrial developments, quarries and mines and wind energy developments among others.

The Noise & Vibration Impact Assessment has addressed the associated structures that Meath County Council consider to be unauthorised and the existing extraction operations that post-date the extended appropriate period for the quarrying operations.

Cumulatively, the Noise & Vibration Impact Assessment has included the remainder of the structures situated in the concrete products area towards the northern end of the site and the impacts of the adjacent Kilsaran operation.

7.2 Methodology

7.2.1 Relevant Guidelines & Standards

The noise and vibration impact assessment has been undertaken with regard to the following established standards and guidelines to determine the impact of the existing Tromman Quarry site activities on the surrounding noise environment and assess for the potential for noise disturbance at existing noise sensitive receivers in the locality:

- Quarries and Ancillary Activities, Guidelines for Planning Authorities, April 2004, Department of the Environment, Heritage and Local Government. (DoEHLG Guidance)

- Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Environmental Protection Agency (2006)

The Quarries and Ancillary Activities, Guidelines for Planning Authorities states that following with regard to the control of noise and blasting;

'Control of noise: Noise-sensitive uses in the vicinity of a quarry, such as dwellings, schools, hospitals, places of worship or areas of high amenity, require that the amount of noise be minimised. The sensitivity to noise is usually greater at night-time (20.00 to 08.00) than during the day, by about 10 dB(A). Many quarries are situated in areas of low background noise and it is appropriate to consider this when setting noise limits. In general, it can be expected that complaints will result where the noise from quarrying and associated activities are between 5 to 10 dB above the background noise levels. In areas of higher background noise levels, the EPA recommends that ideally, if the total noise level from all sources is taken into account, the noise level at sensitive locations should not exceed a L_{Aeq} (1 hour) of 55 dB(A) by daytime and a L_{Aeq} (15 minutes) of 45 dB(A) by night-time. Audible tonal or impulsive components in noise emissions (e.g. the reversing siren on a lorry, required for safety reasons) can be particularly intrusive, and such components should be minimised at any noise-sensitive location.

It may be necessary to raise the noise limits to allow temporary but exceptionally noisy phases in the extraction process, or for short-term construction activity which cannot meet the limits set for routine operations, e.g. the construction of baffle mounds, which bring long-term environmental benefits.

The developer may be required to carry out noise surveys to measure noise levels at the site boundary near sensitive locations, as agreed in advance with the planning authority. Surveys should be carried out in accordance with the EPA's "Environmental Noise Survey – Guidance Document" (2003). Noise monitoring should be carried out on a quarterly basis (or as otherwise agreed), and commenced prior to the commencement of development. The results should be reported to the planning authority within 3 weeks (or as agreed). 95% of all noise measured shall comply with the specified limit values. No individual noise measurement should exceed the limit values by more than 2 dB(A).

Control of blasting: Nearby residents (e.g. within 500 meters) need to be given advance notice when blasting operations are due to take place, which should only be carried out between 09.00 and 18.00 hours, Monday to Friday (except in emergencies or for health and safety reasons beyond the control of the developer). Similarly, such residents should be given the "all clear" signal by means of sirens or other agreed measures when blasting has been completed.

The EPA recommends that to avoid any risk of damage to properties in the vicinity of a quarry, the vibration levels from blasting should not exceed a peak particle velocity of 12 millimeters per second as measured at a receiving location when blasting occurs at a frequency of once per week or less. In the rare event of more frequent blasting, the peak particle velocity should not exceed 8 millimeters per second. The nature of the underlying rock can influence the way blast vibrations are transmitted through the ground to locations outside the site, so it is important that such information (including predicted vibration levels in adjacent noise-sensitive receptors) be submitted with the planning application where relevant.

Blast noise is characterised by containing a large proportion of its energy within a frequency that is below the normal hearing range and is therefore termed "air overpressure." The EPA recommends that blasting should not give rise to air overpressure values at the nearest occupied dwelling in excess of 125 dB(Lin)$_{max.\ peak}$ with a 95% confidence limit.

The developer should carry out blast monitoring (groundborne vibration and air overpressure) for each blast. The monitoring locations should be as agreed within the planning authority and shall be established prior to the commencement of blasting. The results should be reported to the planning authority on a regular agreed basis. Groundborne vibration levels measured at the nearest occupied dwelling should not exceed the specified limit values. 95% of all air overpressure levels measured at the nearest occupied dwelling shall conform to the specified limit value. No individual air overpressure value should exceed the limit value by more than 5 dB(Lin)'.

As outlined in the Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Environmental Protection Agency (2006), the Environmental Protection Agency (EPA) has produced a Guidance Note for Noise in Relation to Scheduled Activities (EPA, 1996). It deals in general terms with the approach to be taken in the measurement and control of noise, and provides advice in relation to the setting of noise Emission Limit Values (ELV) and compliance monitoring. In relation to quarry developments and ancillary activities, it is recommended that noise from the activities on site shall not exceed the following noise ELVs at the nearest noise-sensitive receptor:

- Daytime: 08:00–20:00 h $L_{Aeq\ (1\ h)}$ = 55 dB(A)

- Night-time: 20:00–08:00 h $L_{Aeq\ (1\ h)}$ = 45 dB(A)

Note:

- 95% of all noise levels shall comply with the specified limit value(s). No noise level shall exceed the limit value by more than 2 dB(A).
- On-site activities should be permitted during night-time hours where they comply with the noise ELVs (e.g. heating up of asphalt plants, loading of materials).
- Where existing background noise levels are very low, lower noise ELVs may be appropriate.
- Audible tones or impulsive noise should be avoided at night.
- It is also appropriate to permit higher noise ELVs for short-term temporary activities such as construction of screening bunds, etc., where these activities will result in a considerable environmental benefit.
- In relation to blasting activities within quarry development, it is recommended that the following vibration and air overpressure ELVs are adopted and applied at the nearest vibration and air overpressure sensitive location (e.g. a residential property):

  Ground-borne vibration: Peak particle velocity = 12 mm/s, measured in any of the three mutually orthogonal directions at the receiving location (for vibration with a frequency of less than 40 Hz)

  Air overpressure: 125 dB (linear maximum peak value), with a 95% confidence limit.
- Normal hours of blasting should be defined (e.g. 09:00–18:00 h Monday to Friday), and provision should be included to permit blasting outside these hours for emergency or safety reasons beyond the control of the quarry operator.
- It is recommended that quarry operators provide advance notification of blasting to nearby residents through use of written notes, signage at

site entrance, telephone, or warning sirens (or a combination of these methods).

On the basis of the above, the following noise limits are suggested for the continued operation of the quarry and associated activities post 5th August 2018;

The equivalent sound levels attributable to all on-site operations associated with the development shall not exceed 55 dB(A) L_{eq} over a continuous one hour period between 0700 hours and 1900 hours on Monday to Friday inclusive, and 0700 hours and 1400 hours on Saturday, when measured at any noise sensitive receptor. Sound levels shall not exceed 45 dB(A) at any other time.

7.2.2 CadnaA Noise Prediction Modelling Methodology

CadnaA has been developed to allow detailed noise predictions to be undertaken in accordance with:

- ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2 General methods of calculation.
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Noise

The CadnaA noise prediction model allows for noise from all sources entered into the model to be undertaken simultaneously. The noise model can take topographical effects, ground absorption, screening effects, reflections and focusing effects, among others, into consideration. The modelling software calculates noise levels based on the emission parameters and spatial settings

that are entered. The model calculates the propagation of the sound from each noise source and produces a noise level contour map and graphics in proximity to a facility with colour coded noise level contours. Model parameters, sources, and settings have been incorporated into the model as detailed in Table 7.1. The noise model has been produced to verify the noise readings taken on the existing Tromman Quarry site and confirms that the model is representative of the current on site operations and provides an accurate verifiable prediction at all noise sensitive receptors in the vicinity of the existing Tromman Quarry site. Thus, the noise prediction model provides an appropriate level of confidence when assessing specific noise impact from the Tromman Quarry site.

On 7th February 2019, a site noise survey was undertaken with source specific noise level readings taken in close proximity to the main noise sources on the existing Tromman Quarry site. This allowed for the generation of accurate sound power levels for all main existing noise sources on the site. For the purposes of noise impact assessment, the Sound Power level (L_W) was determined by measuring the Sound Pressure Level (L_P) at a specific distance from the noise source and assuming a Directivity Index (Q) of 2, i.e. hemispherical propagation, using the following equation;

$$L_W = L_p + |10 \cdot \log\left(\frac{Q}{4\pi \cdot r^2}\right)|$$

Parameter	Source	Details
Horizontal distances – Quarry and surrounding area	Quarryplan	Scaled drawings in AutoCAD format.

Quarry Dimensions	Quarryplan	Scaled drawings in AutoCAD format.
Receiver Locations	AONA	In outdoor amenity areas adjacent to nearest residential properties @ 1.5m height.
Plant types, location & Sound Power Level	Quarryplan / site operator.	Source noise measurements were undertaken in close proximity to plant and equipment and within buildings on site. This allowed for an accurate Sound Power Level L_W to be assigned to active plant.
Ground Absorbtion	AONA	A Ground Absorbtion Rate – G = 0.5 has been used in the model, which is appropriate for the surrounding land type.

Table 7.1: Modelling Parameters, Sources and Assumptions

7.3 Noise & Vibration Impacts that have occurred

This assessment of the noise and vibration impacts that are occurring has been undertaken as follows:

- Reference to historical noise and vibration surveys at the nearest noise sensitive locations, to establish the current ambient noise levels in the area (See above).
- Noise monitoring data has been recorded in close proximity to the existing concrete manufacturing and quarrying activities on-going in the existing Tromman Quarry site.
- A prediction of the specific noise levels at the surrounding residential properties from the existing concrete manufacturing and quarrying activities that are occurring at the Tromman Quarry site using CadnaA noise prediction software.
- A comparison of the measured existing noise levels at N1 and N2 and the extrapolated / predicted noise levels at the surrounding residential properties (Noise Sensitive Receptors [NSR's]) against relevant guidelines.

7.3.1 Noise Compliance Monitoring

As a SC application and a rEIAR is required to inspect the impacts of the unauthorised development and cumulative impacts to include the quarry until the date of submission (Winter 2023/24), it is suggested that 2013 is an appropriate 'baseline year' as this is when the precast manufacturing structures in the northern part of the site and other ancillary developments were erected. Further to this initial baseline date, it is also necessary to

consider the period from 4th August 2018, the time at which quarrying became unauthorised, to present.

The 5th August 2018 therefore effectively comprises a date, following which the environmental impact of **all** the site activities which have occurred at the site (both pre-cast manufacturing/ancillary processes and quarrying) will need to be cumulatively considered.

The red line for the SC covers the whole site and therefore, captures any unauthorised development in terms of final face position of which there are some and also it ensures that all extraction activity from the 5th August 2018 until the date of submission.

Table 7.2 summarises the noise monitoring surveys that have been undertaken from 2013 until 2023 by Byrne Environmental at Tromman Quarry. The noise monitoring surveys were carried out to record and assess the noise impacts that the quarry site activities have on the local receiving noise environment and to assess compliance with site relevant Planning Conditions *(Planning Permission Ref. TA/900976 Condition 12)*. The noise monitoring surveys have been conducted in accordance with *ISO 1996-2, 2017 Acoustics – Description, Measurement and Assessment of Environmental Noise* and with reference to the 2016 EPA publication, *"Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*.

The Tromman Quarry site is located in the townland of Tromman approximately 2.2 km west of Rathmolyon village set back from the R156 Regional Road. The surrounding lands can be characterised as rural in nature with land uses in the area identified as agricultural, extractive and

single dwelling houses (residential). The extractive industry is an established land use in the surrounding area dominated by the subject site and the adjoining Kilsaran Quarry which borders the Tromman Quarry site to the West.

Condition 12 of Planning Permission Ref. TA/900976 states that "*site noise shall not exceed 55dB(A) $L_{Aeq,T}$ during 08:00hrs – 18:00 hrs Monday to Saturday and 45 dB(A) $L_{Aeq,T}$ at any other time when measured at any noise sensitive premises in the locality*".

This is an absolute limit that is applied to all extractive sites and is taken from the DoEHLG Guidance referenced earlier in this Section of the rEIAR.

The recorded $L_{Aeq,T}$ values at N1 and N2 at the boundary of the Tromman Quarry site from 2013 until 2023 consistently comply with the specified limit value and are consistent with previous noise survey results. Typically at N1 and N2, the subjective commentary states either '*Quarry noise faintly audible*' or '*Quarry noise not audible*' at N1 and N2. Therefore, it is confirmed that the existing quarrying and concrete manufacturing operations at the Tromman Quarry, to include the operations of the ancillary works and structures referenced under application PL17.305049 for the life of the quarry are not having a significant noise impact at the nearest residential properties to the site. The noise monitoring at this location is inclusive of the cumulative noise impacts from the Tromman Quarry site and Kilsaran Quarry directly adjacent to the Tromman Quarry site and conversely the data that Kilsaran have provided reflects the Keegan operations, as presented below.

Period	Location	Date	Time	$L_{Aeq, 60min}$	$L_{A10, 60min}$	$L_{A90, 60min}$	Notes
Qtr 1 2013	N1	07/02/2013	14:30	48	52	44	Quarry noise faintly audible
	N2	07/02/2013	15:45	57	59	50	Quarry noise not audible
Qtr 2 2013	N1	27/06/2013	10:35	49	55	44	Quarry noise faintly audible
	N2	27/06/2013	11:45	55	63	52	Quarry noise not audible
Qtr 3 2013	N1	03/09/2013	15:15	49	51	40	Quarry noise faintly audible
	N2	03/09/2013	14:00	56	60	48	Quarry noise not audible, Road traffic dominant
Qtr 4 2013	N1	02/12/2013	14:35	47	51	39	Quarry noise faintly audible
	N2	02/12/2013	16:00	54	62	48	Quarry noise not audible, Road traffic dominant
Qtr 1 2014	N1	03/02/2014	12:00	53	59	43	Quarry noise faintly audible
	N2	03/02/2014	10:10	50	57	45	Quarry noise not audible
Qtr 2 2014	N1	10/06/2014	15:30	55	64	47	Quarry noise faintly audible
	N2	10/06/2014	13:45	53	61	48	Quarry noise audible
Qtr 3 2014	N1	02/09/2014	10:10	53	63	43	Quarry noise faintly audible
	N2	02/09/2014	11:25	55	68	49	Quarry noise audible
Qtr 4 2014	N1	24/11/2014	14:15	54	62	50	Quarry noise faintly audible
	N2	24/11/2014	15:30	56	65	51	Quarry noise audible
Qtr 1 2015	N1	17/02/2015	09:10	50	60	41	Quarry noise faintly audible
	N2	17/02/2015	10:35	53	63	46	Quarry noise audible
Qtr 2 2015	N1	18/06/2015	14:00	59	62	38	Quarry noise not audible
	N2	18/06/2015	14:10	53	60	39	Quarry noise faintly audible
Qtr 3 2015	N1	30/09/2015	16:45	60	65	45	Quarry noise not audible
	N2	30/09/2015	15:10	54	61	44	Quarry noise faintly audible
Qtr 4 2015	N1	30/10/2015	11:05	58	63	48	Quarry noise not audible
	N2	30/10/2015	09:50	52	60	46	Quarry noise faintly audible
Qtr 1 2016	N1	01/03/2016	08:30	58	63	49	Quarry noise not audible
	N2	01/03/2016	11:05	52	55	46	Quarry noise faintly audible
Qtr 2 2016	N1	03/06/2016	09:45	60	66	52	Quarry noise not audible
	N2	03/06/2016	11:15	55	62	50	Quarry noise faintly audible
Qtr 3 2016	N1	05/09/2016	08:15	58	71	50	Quarry noise not audible
	N2	05/09/2016	11:00	53	65	48	Quarry noise faintly audible

Qtr 4 2016	N1	03/11/2016	11:05	50	53	46	Quarry noise faintly audible
	N2	03/11/2016	10:00	60	68	52	Quarry noise not audible
Qtr 1 2017	N1	30/03/2017	08:35	53	60	49	Quarry noise faintly audible
	N2	30/03/2017	09:55	57	63	50	Quarry noise not audible
Qtr 2 2017	N1	02/05/2017	11:05	51	55	46	Quarry noise faintly audible
	N2	02/05/2017	09:00	56	58	49	Quarry noise not audible
Qtr 3 2017	N1	15/08/2017	08:10	53	59	42	Quarry noise faintly audible
	N2	15/08/2017	09:20	57	62	49	Quarry noise not audible
Qtr 4 2017	N1	10/11/2017	08:25	55	66	50	Quarry noise faintly audible
	N2	10/11/2017	10:30	58	68	50	Quarry noise not audible
Qtr 1 2018	N1	04/02/2018	11:45	53	55	48	Quarry noise faintly audible
	N2	04/02/2018	13:50	60	65	53	Quarry noise not audible
Qtr 2 2018	N1	05/05/2018	14:15	52	59	46	Quarry noise faintly audible
	N2	05/05/2018	15:35	57	72	52	Quarry noise not audible
Qtr 3 2018	N1	02/08/2018	10:30	51	48	55	Quarry noise faintly audible
	N2	02/08/2018	08:45	53	50	55	Quarry noise not audible
Qtr 1 2019	N1	04/02/2019	10:35	51	58	45	Quarry noise faintly audible
	N2	04/02/2019	11:45	52	68	47	Quarry noise not audible
Qtr 2 2019	N1	01/06/2019	08:30	53	60	46	Quarry noise faintly audible
	N2	01/06/2019	09:55	54	70	48	Quarry noise not audible
Qtr 3 2019	N1	28/08/2019	10:25	54	62	45	Quarry noise faintly audible
	N2	28/08/2019	11:40	53	68	48	Quarry noise not audible
Qtr 4 2019	N1	08/10/2019	14:15	55	68	47	Quarry noise faintly audible
	N2	08/10/2019	15:55	54	57	46	Quarry noise not audible
Qtr 1 2020	N1	01/03/2020	10:10	52	56	46	Quarry noise faintly audible
	N2	01/03/2020	10:35	58	63	49	Quarry noise not audible
Qtr 2 2020	N1	03/06/2020	14:10	48	52	44	Quarry noise faintly audible
	N2	03/06/2020	15:30	59	67	50	Quarry noise not audible
Qtr 3 2020	N1	10/09/2020	14:40	50	54	47	Quarry noise faintly audible
	N2	10/09/2020	15:58	57	68	51	Quarry noise not audible
Qtr 4 2020	N1	30/10/2020	10:45	47	50	45	Quarry noise faintly audible
	N2	30/10/2020	12:40	57	66	49	Quarry noise not audible
Qtr 1 2021	N1	01/02/2021	08:05	48	55	45	Quarry noise faintly audible

	N2	01/02/2021	09:43	60	62	50	Quarry noise not audible
Qtr 2 2021	N1	17/06/2021	11:05	51	54	47	Quarry noise faintly audible
	N2	17/06/2021	13:35	62 (52 no traffic)	66	55	Quarry noise not audible
Qtr 3 2021	N1	09/08/2021	08:55	54	58	49	Quarry noise faintly audible
	N2	09/09/2021	11:15	65 (53 no traffic)	68	50	Quarry noise not audible
Qtr 4 2021	N1	02/12/2021	14:20	51	52	47	Quarry noise faintly audible
	N2	02/12/2021	15:45	63(52 no traffic)	66	55	Quarry noise not audible
Qtr 1 2022	N1	08/02/2022	14:25	50	53	46	Quarry noise faintly audible
	N2	08/02/2022	15:45	59	64	53	Quarry noise not audible
Qtr 2 2022	N1	31/05/2022	08:15	23	57	45	Quarry noise faintly audible
	N2	31/05/2022	09:35	60	63	55	Quarry noise not audible
Qtr 3 2022	N1	05/09/2022	14:10	54	57	45	Quarry noise faintly audible
	N2	05/09/2022	15:35	65 (55 no traffic)	66	56	Quarry noise not audible
Qtr 4 2022	N1	04/11/2022	11:00	55	60	45	Quarry noise faintly audible
	N2	04/11/2022	12:11	62	66	54	Quarry noise not audible
Qtr 1 2023	N1	31/03/2023	14:25	55	59	50	Quarry noise faintly audible
	N2	31/03/2023	15:50	59	64	54	Quarry noise not audible
Qtr 2 2023	N1	02/06/2023	10:15	54	57	50	Quarry noise faintly audible
	N2	05/06/2023	12:05	60	66	55	Quarry noise not audible
Qtr 3 2023	N1	03/07/2023	15:55	53	56	50	Quarry noise faintly audible
	N2	03/07/2023	15:10	54	58	52	Quarry noise not audible

Table 7.2: Noise monitoring survey results from 2013 until 2023 at Keegan Quarries Ltd., Tromman, Rathmolyon, Co. Meath.

Period	Location	Date	$L_{Aeq, 60min}$	$L_{A10, 60min}$	$L_{A90, 60min}$
Qtr 4 2014	N1	20/11/2014	47.6	48.9	45.4
	N2	20/11/2014	51.1	52.8	42.8
Qtr 2 2015	N1	16/07/2015	50.8	52.5	47.1
	N2	16/07/2015	53.6	54.1	44.9
Qtr 4 2015	N1	04/12/2015	52.8	44	41.1
	N2	04/12/2015	55	45.5	40.2
Qtr 1 2016	N1	19/02/2016	59.7	61.9	54.2
	N2	19/02/2016	56	56.7	50.5
Qtr 4 2016	N1	04/11/2016	49.9	52.9	44.1
	N2	04/11/2016	47.7	50	41.5
Qtr 1 2017	N1	04/11/2017	49.2	51.9	42.8
	N2	04/11/2017	45.9	46.8	43.3
Qtr 3 2020	N1	08/09/2020	59.0	60.0	51.0
	N2	08/09/2020	52.0	54.0	49.0
Q3 2022	N1	13/07/2022	59.0	61.0	56.0
	N2	13/07/2022	50.0	52.0	47.0

Table 7.3: Periodic Noise monitoring survey results since November 2014 until November 2022 at Kilsaran Quarries directly adjacent to Keegan Quarries Ltd., Tromman, Rathmolyon, Co. Meath

The Council-approved noise monitoring survey locations are located adjacent to the operational boundaries of the two quarries (Kilsaran and Keegan) and in proximity to the nearest residential properties to each, as presented in Figure 7.1.

The technical reports prepared by Byrne Environmental report the noise parameters $L_{Aeq, 60min}$ dB(A), $L_{A90, 60min}$ dB(A) and $L_{A10, 60min}$ dB(A). The measurement parameters recorded and reported during the noise surveys are defined as follows:

- L_{Aeq} is the A-weighted equivalent continuous steady sound level during the sample period.

- L_{A10} is the A-weighted sound level that is exceeded for 10% of the sample period and is generally used to quantify traffic noise.
- L_{A90} is the A-weighted sound level that is exceeded for 90% of the sample period and is generally used to quantify background noise.
- A-weighted Decibel (dBA): Decibels measured on a sound level meter incorporating a frequency weighting (A Weighting) which differentiates between sound of different frequency (pitch) in a similar way to the human ear. This takes account of the fact that the human ear has different sensitivities to sound at different frequencies.

It is noted that occasional exceedances of the noise limit of 55 dB(A) have been recorded at the monitoring locations since 2013. The important parameter to analyse when the measured $L_{Aeq, 60min}$ dB(A) value exceeds 55 dB(A) is the $L_{A90, 60min}$ dB(A) noise parameter. On each of the occasions when there is an exceedance of the 55 dB(A) limit value, the $L_{A90, 60min}$ dB(A) value was well below the 55 dB(A) level. These values suggest that the background noise level in the area is well below 55 dB(A) and the impact on the measured $L_{Aeq, 60min}$ dB(A) value is not due to the continuous operations at the Keegan Quarry site and may be due to other extraneous noise sources in closer proximity to the survey location. If the $L_{A90, 60min}$ dB(A) value was noted to exceed the 55 dB(A) level then this may be an indication that the specific continuous operations at the Keegan Quarry site are causing a level in excess of 55 dB(A), however this is not the case at this quarry.

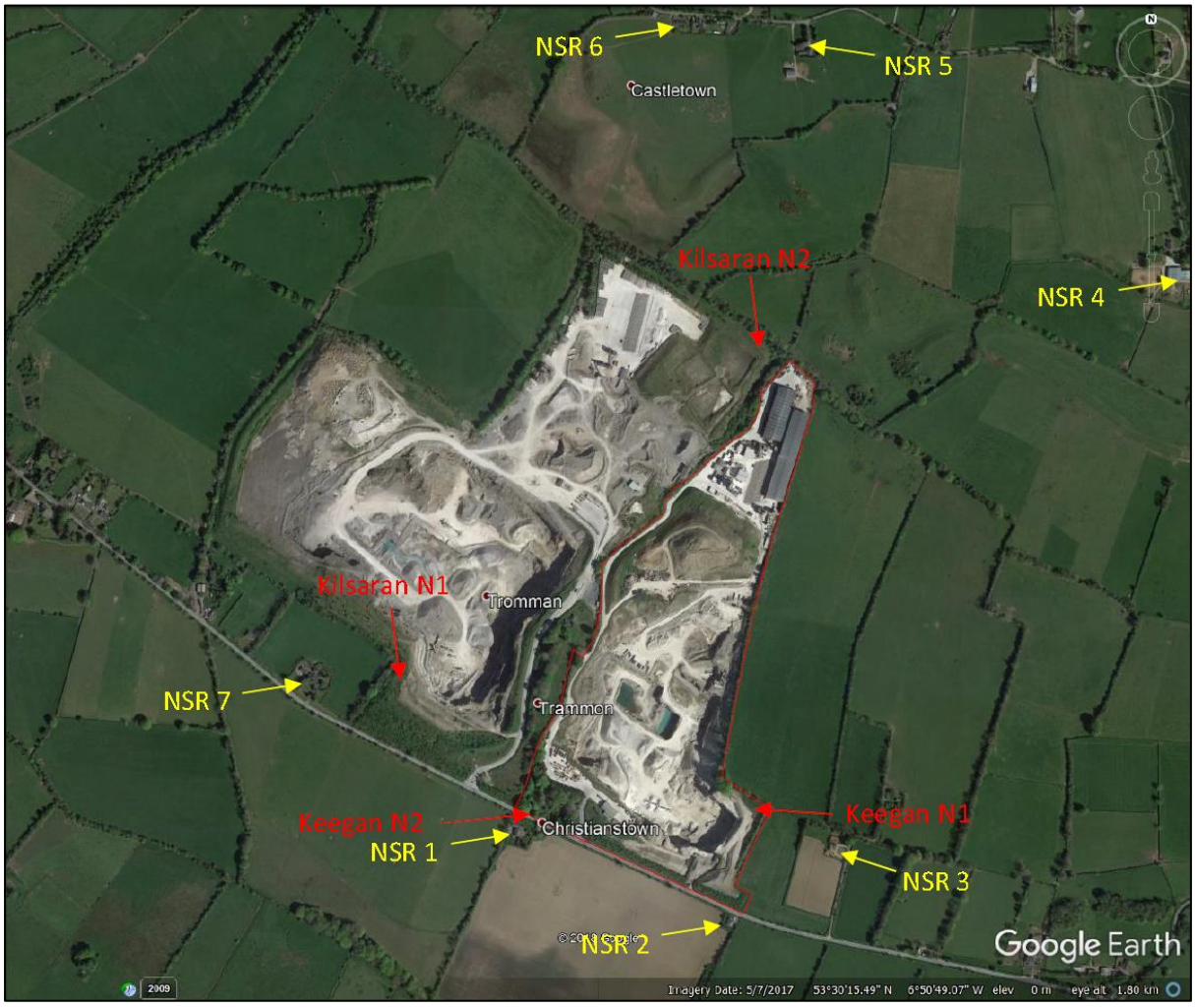


Figure 7.1: Noise monitoring locations and Noise Sensitive Receiver (NSR) locations in proximity to the nearest residential properties to the Keegan Quarries Ltd. site in Tromman, Rathmolyon, Co. Meath and at the Kilsaran Quarry directly adjacent to the Keegan Quarries Ltd. site.

7.3.2 Vibration Compliance Monitoring

In accordance with best practice, vibration monitoring with the use of a vibrograph has been undertaken for every blast since 2013 at the nearest residential properties to the Tromman Quarry site. The vibration monitoring locations and results are provided in Table 7.4. The blast monitoring locations

relate to the most proximate residential properties to the extraction operations.

The DoEHLG Guidance provides a limit for ground-borne vibration: Peak particle velocity = 12 mm/s, measured in any of the three mutually orthogonal directions at the receiving location (for vibration with a frequency of less than 40 Hz). The DoEHLG Guidance provides a limit for Air overpressure: 125 dB (linear maximum peak value), with a 95% confidence limit. These limits are not exceeded by current blast practices.

Table 7.4: Vibration monitoring results for every blast since 2013 at the nearest residential properties to the Tromman Quarry site.

Date	No of Holes	Total Charge (kgs)	No of Delays	MIC (kgs)	Peak Particle Velocity (mm/sec)			Plan distance to blast (m)	Air-Overpressure (dBL)	Bearing of Ins to Blast	Location
					H (mm/sec)	T (mm/sec)	V (mm/sec)				
29/01/2013	60	7390	60	125	2.00	2.50	2.10	310	125	43°	Regan
21/03/2013	34	8102	59	160	8.90	9.50	3.60	200	113	340	Damian Montague
05/06/2013	43	10750	43	285	7.49	8.34	5.21	220	123.9	E	Keegans House
28/08/2013	75	4830	75	95	5.08	4.95	2.92	226	116.7	E	Keegans House
30/09/2013	32	7434	64	135	2.54	1.52	1.21	240	125.5	83^0	Regans Gateway
09/12/2013	59	9485	59	170	2.16	1.97	1.40	310	119.9	33^0	Gateway to Regans
28/02/2014	49	6061	49	125	2.70	2.10	2.20	290	115	39^0	Regan
09/04/2014	66	6115	66	140	2.26	1.52	2.28	300	113.1	55^0	Regan
16/05/2014	15	4767	30	200	6.22	3.49	3.49	250	123.9	178°	Regan
26/06/2014	125	5068	125	45	2.29	1.14	1.78	270	114.2	100°	Gateway to Regans
16/07/2014	19	5776	36	195	7.62	4.57	2.47	250	121.2	68	Regan
17/09/2014	23	7835	46	180	6.70	3.90	3.60	230	125	98°	Mr. Regan
28/10/2014	20	6113	40	150	7.37	3.30	3.94	240	122.9	100°	Gateway to Regans
08/12/2014	72	7335	72	150	4.06	3.23	3.30	405	113	170	Regan Residence
26/01/2015	50	6155	49	145	4.06	2.98	3.74	300	118.9	56^0	Regans
18/03/2015	31	8400	54	180	3.60	2.30	2.10	290	132	275°	Mr. Collins
08/06/2015	78	7930	82	200	2.10	1.70	1.70	290	130	275°	Keegan Residence
24/07/2015	44 (43)	7037	43	175	4.51	3.49	3.49	290°	115.2	219°	Keegans Residence
23/09/2015	47	9492	68	170	1.77	2.03	1.58	270	124.3	110°	Regan
13/11/2015	29	8855	55	180	4.63	2.79	2.34	270	120	99°	Regan
14/01/2016	39	5749	39	160	3.11	1.56	2.85	260	119	56°	Regan Residence
27/01/2016	27	6319	54	180	2.54	1.71	2.73	395	124.3	95°	Regan
22/02/2016	31	9282	62	180	3.30	2.03	2.28	310	117.9	99°	Regans Residence
15/04/2016	20	6546	39	175	1.77	1.52	1.77	330	125.9	89°	Regan Residence
18/05/2016	26	7392	2	165	2.22	1.01	1.46	330	123.7	98°	Regan
23/06/2016	36	9010	72	150	5.20	5.20	4.00	230	123.4	39°	Regan Residence
15/07/2016	29	8374	53	170	9.33	7.23	5.71	260	115.2	103°	Regan
25/08/2016	43	6015	43	165				290		679°	Did not trigger
23/09/2016	27	8985	29	345	3.30	2.00	2.20	300	23.7	99°	Regan Residence

25/10/2016	52	8500	52	170	2.79	3.55	2.85	310	123.8	062°	Regan Residence
22/11/2016	40	6950	40	187.5	2.30	1.20	1.30	300	115.7	65°	Regans
06/12/2016	52	8844	52	175	3.30	2.90	2.50	290	114.6	66°	Regan Residence
18/01/2017	26	8007	52	165	3.10	1.50	1.80	300	117.9	99°	Regan Residence
16/02/2017	31	8227	62	150	2.09	1.84	1.52	310	95.9	102°	Regan Residence
29/03/2017	31	8230	61	155	2.28	1.65	1.65	280	112.8	91°	Regan Residence
10/05/2017	32	9860	64	180	2.80	1.60	2.30	270	106.5	142°	Regan Residence
16/06/2017	52	6752	52	140	1.95	2.60	2.92	350	94	184°	Regans Residence
10/07/2017	45	13277	90	145	10.47	6.79	6.03	260	104.9	87°	Regan Residence
04/09/2017	40	7019	40	185	5.65	4.76	3.55	300	95.9	65°	Regan Residence
02/10/2017	19	5910	38	170	8.95	5.77	6.28	200	103.5	102°	Regan Residence
03/11/2017	47+42	7910	99	175	2.64	3.36	3.93	320	94.3	119°	Regan Residence
08/11/2017	29	6355	29	275	9.84	5.58	9.90	180	91	84°	Regan Residence
04/01/2018	59+11	7,749	62	180	4.88	2.28	1.77	270	117.9	119°	Regan Residence
29/01/2018	23+61	9,765	84	170	3.45	3.17	3.61	270	124	57°	Regan Residence
26/02/2018	62+31	11,025	93	180	2.22	1.65	2.22	350	115.9	091°	Regan Residence
05/04/2018	65	7,966	65	165	3.42	3.93	4.12	220	91.5	84°	Regan
03/05/2018	44	7,420	44	180	4.00	2.70	2.50	327	119.2	50°	Regans
28/05/2018	78	9,805	76	165	2.28	2.34	2.09	200	97.5	35°	Regan Residence
27/06/2018	51	7,690	51	155	2.79	3.42	2.73	280	120	47°	Regan Residence
23/07/2018	62	9,236	62	180	1.95	1.39	2.03	290	126.1	84°	Regan Residence
27/07/2018	44	6,425	44	177.5	0.82	1.20	0.63	340	97.5	91°	Regans Residence
23/08/2018	61+2	10,242	63	175	4.31	4.00	5.77	260	116.9	50°	Regan Residence
13/09/2018	64	11,500	64	210	3.17	2.60	2.41	300	117.2	84°	Regans Residence
15/10/2018	53	9,105	53	175	3.55	2.79	3.49	280	119.7	71°	Regan Residence
07/11/2018	24+50	6,348	74	210	1.39	1.58	1.58	260	115.8	81°	Regan Residence
19/11/2018	38	7,475	30	265	1.77	1.39	1.71	300	120.9	44°	Regan Residence
14/12/2018	56	8,459	56	170	4.57	2.54	2.34	260	120.1	75°	Regan Residence
23/01/2019	10,330	73	290	2.00	1.84	1.84	4085	290	122.3	43°	Regan
12/02/2019	8,170	49	183	3.66	2.98	5.58	4088	270	116.6	67°	Regan Residence
13/03/2019	10,088	41	300	2.20	1.71	1.71	4084	290	118.5	84°	Regans
23/01/2019	39+34	10,330	73	290	2.00	1.84	1.84	290	122.3	43°	Regan Residence
12/02/2019	49	8,170	49	183	3.66	2.98	5.58	270	116.6	67°	Regan Residence
13/03/2019	41	10,088	41	300	2.20	1.71	1.71	290	118.5	84°	Regan Residence
04/04/2019	60	10,000	60	170	9.52	5.70	5.96	219	117	55°	Regan Residence
30/04/2019	30	9,242	60	170	5.71	7.42	8.12	280	115	92°	Regan Residence
04/06/2019	46	11,305	41	305	2.70	1.90	2.70	290	125	30°	Regan Residence

28/06/2019	40	7,650	48	180	1.84	1.46	1.65	410	108.4	84°	Regan Residence
19/07/2019	39+8	12424	47	300	1.58	3.81	2.73	300	116.4	84°	Regan Residence
30/08/2019	5	8,643	52	170	1.48	1.52	1.52	350	107.5	41°	Regan Residence
26/09/2019	20	6,336	40	200	2.22	1.84	1.39	350	109.5	84°	Regan Residence
18/10/2019	41+8	12,692	49	300	3.11	3.17	2.22	300	120.8	47°	Regan Residence
15/11/2019	27	7,334	54	150	1.71	1.71	1.85	360	116.1	91°	Regan Residence
17/12/2019	49	12,913	49	291	2.60	2.66	2.15	305	104.9	49°	Regan Residence
30/01/2020	32	8,890	64	150	1.58	1.27	0.88	420	88.0	101°	Regan Residence
06/03/2020	54	8,790	54	170	2.25	2.43	2.85	280	121.0	242°	Regan Residence
22/04/2020	26	7,250	52	150	1.78	1.78	1.46	285	123.0	175°	Regan Residence
27/05/2020	33	5,677	33	180	2.92	2.66	4.38	220	116.0	044°	Regan Residence
23/06/2020	30	7,611	58	140	3.17	1.77	1.39	242	121.9	119°	Regan Residence
17/07/2020	56+7	10,065	63	185	2.98	2.28	3.23	260	123.0	84°	Regan Residence
18/08/2020	52	8,695	52	180	1.96	1.14	1.46	300	119.0	84°	Regan Residence
18/09/2020	61	9,655	61	170	2.71	4.12	2.85	220	118.0	84°	Regan Residence
23/10/2020	61	9,145	60	170	3.55	2.60	2.09	290	103.0	111°	Regan Residence
27/11/2020	32	9,223	33	305	1.71	2.22	1.46	370	102.8	43°	Regan Residence
18/12/2020	26	10,550	26	465	2.03	1.71	1.96	310	94.0	119°	Regan Residence
08/01/2021	45	12,309	51	3.23	5.77	1.48	84°	5.77	1.48	95.9	Regan Residence
21/02/2021	35	10,388	35	1.90	2.03	1.01	29°	2.03	1.01	112.0	Regan Residence
23/04/2021	29	6,935	29	1.27	0.95	1.01	53°	0.95	1.01	118.0	Regan Residence
14/05/2021	60	9,778	63	3.49	4.76	6.16	41°	4.76	6.16	114.0	Regan Residence
24/06/2021	48	7,275	48	2.66	3.23	3.17	119°	3.23	3.17	106.0	Regan Residence
23/07/2021	66	10,862	66	4.63	2.66	4.12	119°	2.66	4.12	113.0	Regan Residence
30/07/2021	26	9,233	26	1.96	2.54	2.03	37°	2.54	2.03	107.0	Regan Residence
20/09/2021	62+11	10,430	73	3.81	3.55	3.93	11°	3.55	3.93	109.0	Regan Residence
12/10/2021	47	7,178	47	1.27	1.58	0.82	85°	1.58	0.82	122.0	Regan Residence
05/11/2021	57	8,800	57	3.55	4.12	3.55	95°	4.12	3.55	115.0	Regan Residence
03/12/2021	74	6,674	74	0.95	1.65	1.08	84°	1.65	1.08	102.0	Regan Residence
10/01/2022	67	7,087	67	117	1.65	2.03	1.71	270	111.0	28°	Regan Residence
02/01/2022	64	9,900	64	182	3.30	3.23	5.71	210	111.0	119°	Regan Residence
15/02/2022	34	3,327	34	105	1.52	1.65	1.71	350	103.0	42°	Regan Residence
04/03/2022	34	4,888	34	168	4.31	1.84	3.93	190	119.0	41°	Regan Residence
11/03/2022	41	5,624	41	160	2.22	2.28	1.20	348	106.0	30°	Regan Residence
08/04/2022	110	7,608	48	168	0.95	1.01	1.01	550	106.5	33°	Regan Residence
22/04/2022	32	10,220	32	375	4.63	2.54	2.85	238	104.2	28°	Regan Residence
03/06/2022	48	7,855	48	172	5.65	10.92	8.57	160	121.9	65°	Regan Residence

21/06/2022	21	6,707	21	385	5.96	2.79	4.12	220	123.5	51°	Regan Residence
11/07/2022	52	5,198	52	110	1.46	1.71	1.77	273	110.0	27°	Regan Residence
29/07/2022	72	11,035	72	184	3.11	5.90	3.87	210	115.9	84°	Regan Residence
05/09/2022	33	8,855	32	400	11.78	11.04	9.77	210	118.5	38°	Regan Residence
20/09/2022	61	8,498	61	152	2.03	2.09	2.60	319	113.1	42°	Regan Residence
07/10/2022	68	8,883	68	155	1.39	1.14	1.01	410	113.1	54°	Regan Residence
10/11/2022	46+92	12,421	148	165	4.38	6.98	8.38	205	112.3	95°	Regan Residence
16/12/2022	50	7,006	50	170	2.92	2.79	1.71	260	113.5	47°	Regan Residence
17/01/2023	67	10,123	62	178	5.33	4.57	4.25	230	124.4	119°	Regan Residence
14/02/2023	51	7,467	51	170	3.17	2.47	2.66	270	115.7	42°	Regan Residence
24/02/2023	83	5,970	83	95	<0.5	<0.5	<0.5	570	<120	95°	Regan Residence
16/03/2023	38	6,832	38	200	3.42	5.14	5.77	220	116.1	95°	Regan Residence
30/03/2023	64	8,405	64	185	1.33	1.46	1.14	295	121.5	91°	Regan Residence
21/04/2023	54	9,415	54	195	2.79	3.36	2.85	240	119.6	67°	Regan Residence
17/05/2023	38	6,486	38	180	2.28	1.52	3.23	320	112.8	42°	Regan Residence
09/06/2023	46	7,341	46	184	1.84	2.98	2.15	312	88.0	51°	Regan Residence
05/07/2023	63+12	10,921	75	220	4.25	2.41	3.62	241	88.0	95°	Regan Residence
04/08/2023	57	8,511	57	190	1.96	1.27	2.79	280	123.0	42°	Regan Residence
29/08/2023	62	10,195	62	200	2.92	1.96	2.79	280	119.3	95°	Regan Residence

There have been just three exceedances of the air overpressure limits at the vibration monitoring location at the Reagan Residence since 2013. The DoEHLG Guidance provides a limit for ground-borne vibration: Peak particle velocity = 12 mm/s, measured in any of the three mutually orthogonal directions at the receiving location (for vibration with a frequency of less than 40 Hz). No exceedances of the limit for ground-borne vibration have occurred. The DoEHLG Guidance provides a limit for Air overpressure: 125 dB (linear maximum peak value), with a 95% confidence limit. The three occurrences of the air overpressure exceedances are shown below. These values indicate an insignificant exceedance of <1 dB(L) of the air overpressure limit of 125 dB(L). Note: 1 dB(A) is indiscernible to the human ear.

Date	No of Holes	Total Charge (kgs)	No of Delays	MIC (kgs)	Peak Particle Velocity (mm/sec)			Plan distance to blast (m)	Air-Overpressure (dBL)	Bearing of Ins to Blast	Location
30/09/2013	32	7434	64	135	2.54	1.52	1.21	240	125.5	83^0	Regans Gateway
15/04/2016	20	6546	39	175	1.77	1.52	1.77	330	125.9	89°	Regan Residence
23/07/2018	62	9236	62	180	1.95	1.39	2.03	290	126.1	84°	Regan Residence

7.3.3 Concrete Manufacturing Noise Impacts that have occurred

The results of the noise prediction model addresses the associated industrial structures that Meath County Council consider to be unauthorised including the electrical substation, 2 no. batching plants and hopper, storage bays and the industrial unit are outlined in Table 7.5. This noise prediction model primarily assesses the source specific noise impact from the northern area of the Tromman Quarry site, which allows for the assessment of the present site layout with the erection of the pre-cast manufacturing unit on the eastern

side of the concrete yard and the internal arrangement of the concrete block making yard and storage, reverting to its existing central location.

The sound power level (L_W) of the noise sources included in this noise prediction model are as follows:

Point Sources:

Name	L_W dB(A)
7 Unloading Site #1	104.0
19 Concrete Plant	110.0
6 Drying Plant	95.0

Line Sources:

Name	L_W dB(A)
Conveyor - Screening Plant	105.2
Conveyor - Batching Plant	104.8

Area Sources:

Name	L_W dB(A)
PP TA 20408 - Precast Plant #1	86.3
17 Precast Plant #2	87.6

Vertical Area Sources:

Name	L_W dB(A)
Shed 5	99.0
9 Screening Plant	105.7
10 Crushing Plant	102.1
11 Hopper Feed	98.4
17 Precast Plant #2	86.8
PP TA 20408	109.2
PP TA 20408	85.2

Table 7.5: Predicted noise levels from the associated industrial structures that Meath County Council consider to be unauthorised including the electrical substation, 2 no. batching plants and hopper, storage bays and the industrial unit in the northern area of the Tromman Quarry site (See Figure 7.2)

Name	Predicted Noise Level	Receiver Height (m)	Coordinates		
			X (m)	Y (m)	Z (m)
NSR 1	29.0 dB(A)	1.50	277437	249809	74.43
NSR 2	30.1 dB(A)	1.50	277800	249667	77.64
NSR 3	39.6 dB(A)	1.50	277971	249789	83.53
NSR 4	40.5 dB(A)	1.50	278562	250851	74.41
NSR 5	40.5 dB(A)	1.50	278168	251207	71.50
NSR 6	41.1 dB(A)	1.50	277922	251182	71.50
NSR 7	33.7 dB(A)	1.50	277086	250061	74.99
Limit	**55 dB(A)**				

NSR 1 corresponds to Noise Monitoring Location N2 (i.e. the house southwest of site adjacent site entrance gate). The predicted noise level of 29 dB(A) at NSR 1 indicates that the associated industrial structures in the northern area of the site are not having a significant noise impact at properties to the south of the Tromman Quarry site. Relative to the measured noise level at this location these activities are having no impact. The predicted noise level of 41 dB(A) at NSR 6 to the north of the site is not a significant daytime noise level relative to the quarry noise limits during daytime.

7.3.4 Quarrying Noise Impacts that have occurred

The results of the noise prediction model to address the extraction operations that post-date the extended appropriate period for the quarrying operations that Meath County Council consider to be unauthorised (i.e. since August 2018) are presented in Table 7.6. The sound power level (L_W) of the noise sources included in this noise prediction model are as follows:

Point Sources:

Name	L_W dB(A)
Screening Plant	120.0
Drill Rig	115.0

Moving Line Sources:

Name	L_W dB(A)		Moving Pt. Src	
	Type	Value	Number per hour	Speed (km/h)
Komatsu Loaders	PWL-Pt	105	60.0	10.0
HGV Deliveries	PWL-Pt	105	12.0	10.0

Name	Predicted Noise Level	Receiver Height (m)	Coordinates		
			X (m)	Y (m)	Z (m)
NSR 1	43.5 dB(A)	1.50	277437	249809	74.43
NSR 2	44.2 dB(A)	1.50	277800	249667	77.64
NSR 3	40.7 dB(A)	1.50	277971	249789	83.53
NSR 4	34.7 dB(A)	1.50	278562	250851	74.41
NSR 5	32.9 dB(A)	1.50	278168	251207	71.50
NSR 6	31.6 dB(A)	1.50	277922	251182	71.50
NSR 7	35.1 dB(A)	1.50	277086	250061	74.99
Limit	55 dB(A)				

Table 7.6: Predicted noise levels from the existing extraction operations that post-date the extended appropriate period for the quarrying operations that Meath County Council consider to be unauthorised in the Tromman Quarry site. (See Figure 7.3)

NSR 1 corresponds to Noise Monitoring Location N2 (i.e. the house southwest of site adjacent site entrance gate). The predicted daytime noise level of 43.5 dB(A) at NSR 1 indicates that the quarrying noise sources are not having a significant noise impact at properties to the south of the Tromman Quarry site relative to the quarry noise limits during daytime.

7.3.5 Cumulative Noise Impacts that have occurred

The cumulative noise impacts that are occurring have been calculated in accordance with the approach outlined above and the results of the

cumulative noise prediction model to assess the in-combination effects of the manufacturing structures in the northern area of the Tromman Quarry site and the quarrying operations that post-date the extended appropriate period for the quarrying operations are presented in Table 7.7. The sound power level (L_W) of the noise sources included in this noise prediction model are as outlined above.

Name	**Predicted Noise Level**	**Receiver Height (m)**	**Coordinates**		
			X (m)	**Y (m)**	**Z (m)**
NSR 1	43.7 dB(A)	1.50	277437	249809	74.43
NSR 2	44.3 dB(A)	1.50	277800	249667	77.64
NSR 3	43.2 dB(A)	1.50	277971	249789	83.53
NSR 4	41.5 dB(A)	1.50	278562	250851	74.41
NSR 5	41.2 dB(A)	1.50	278168	251207	71.50
NSR 6	41.6 dB(A)	1.50	277922	251182	71.50
NSR 7	37.5 dB(A)	1.50	277086	250061	74.99
Limit	**55 dB(A)**				

Table 7.7: Predicted noise levels from the manufacturing structures in the northern area of the Tromman Quarry site and the existing extraction operations that post-date the extended appropriate period for the quarrying operations that Meath County Council consider to be unauthorised in the Tromman Quarry site. (See Figure 7.4)

The predicted cumulative daytime noise level of 43.7 dB(A) at NSR 1 indicates that the cumulative noise from quarrying and the associated industrial structures in the northern area of the site are not having a

significant noise impact at properties to the south of the Tromman Quarry site relative to the quarry noise limits during daytime.

The cumulative noise from the associated structures in the northern area of the Tromman Quarry site and the existing extraction operations that post-date the extended appropriate period for the quarrying operations have been assessed. The sound level from these noise sources do not result in an exceedance of the planning condition noise limits at the nearest residential receiver locations, as set out in Condition 12 of TA/900976 and is in accordance with the relevant Guidelines outlined in Section 8.2.1 above. This analysis is confirmed by the monitoring results provided to the Meath County Council by Keegan Quarries Limited and Kilsaran independently, under their ongoing periodic monitoring.

7.4 Noise and Vibration Impacts that are Occurring

7.4.1 Noise Impacts that are occurring

As detailed in Tables 7.2 and 7.3 and discussed in previous sections, the recorded $L_{Aeq,T}$ values at N1 and N2 at the boundary of the Tromman Quarry site in 2023 comply with the specified limit value and are consistent with previous noise survey results. In the 3 recordings so far for 2023 at N1 and N2, the subjective commentary states either 'Quarry noise faintly audible' or 'Quarry noise not audible' at N1 and N2. No exceedance in the 55dB(A)$L_{Aeq,T}$ limit for the site is being observed as a result of current operations.

Therefore, it is confirmed that the existing quarrying and concrete manufacturing operations at the Tromman Quarry, to include the operations of the ancillary works and structures referenced under application PL17.305049 for the life of the quarry are not having a significant noise impact at the nearest residential properties to the site.

As previously discussed, the noise monitoring at this location is inclusive of the cumulative noise impacts from the Tromman Quarry site and Kilsaran Quarry directly adjacent to the Tromman Quarry site and conversely the data that Kilsaran have provided, which also accords with the relevant limit, reflects the Keegan operations.

7.4.2 Vibration Impacts that are occurring

The drill rig operations and blasting for the quarrying process take place a maximum of twice per month. The drilling using an air drill and compressor operates for approximately two days every month. During the site noise survey, the drill rig was in operation on the quarry floor, with a noise level of approximately 97 dB(A) at 1m from source.

All neighbours are notified in advance of upcoming blasting dates and times. Blasting of the rock results in an instantaneous noise impact. However, this is a very short – term noise impact and results in an instantaneous increase in noise levels during daytime hours with immediate reversion back to preceding noise levels. A typical sound level from blasting, measured at 15 m from the source is 94 dB(A) (Hoover 1996). Table 7.8 outlines the predicted noise levels in the vicinity of an active blasting site. The accepted reduction in noise levels with distance from a blast is based

on the assumption that the sound level drop off rate equates to 6 dB per doubling of distance.

Blasting parameters including PPV and Air Overpressure have been set by the EPA for all quarrying proposed operations in Ireland.

Table 7.8: Estimated Blasting Noise in the vicinity of the quarry.

Distance to receiver (m)	Sound Level At Receiver Location dB(A)
15	~ 94
30	~ 88
60	~ 82
120	~ 76
240	~ 70
480	~ 64
960	~ 58

As indicated in Table 7.8, sensitive receivers within approximately 500m of the blasting site could be exposed to instantaneous noise levels of approximately 65 - 70 dB(A). However, these blasts result in very short – term instantaneous noise impact at all residential receivers in the vicinity of the quarry and do not constitute a significant noise impact.

It is considered that as the continued activities will replicate those that have already taken place the levels of vibration likely to be experienced at the receptor properties will not to be significant in environmental terms. Blast monitoring information has been provided for a 5 year period, to include the appropriate baseline date upon which extraction activities became unauthorised of 5th August 2018. Accordingly it is considered reasonable to

assume that as the levels are within acceptable parameters throughout this period, then it is likely that this will continue to be achieved.

The blast monitoring results indicate levels that fall below the limits prescribed by the DoEHLG in their relevant guidance. The results indicate that during the last 10 years presented compliance has been absolute with the measured peak particle velocities and air-overpressure less than the limits prescribed. Therefore, it is considered that there any potential vibration impact in relation to the on-going blasting is negligible.

The operational site as outlined in previously considered Environmental Impact Statements employs the following general blast design control measures to ensure compliance with recommended standards.

- The optimum blast ratio is maintained and the maximum instantaneous charge is optimised.
- Explosive charges are properly and adequately confined by a sufficient amount and quality, of stemming.
- Accurate face surveys (profiling) are undertaken to assist with blast design and specification..
- No blasting is carried out outside 10:00 – 18.00 hours on working days (Monday to Friday). There is no blasting carried out on Saturdays, Sundays or public holidays.
- All nearby dwellings are given advance notice of blasting.

7.5 Noise & Vibration Impacts that can reasonably be expected to occur

The final stage of the assessment is to consider the significant effects, or impacts, that can **reasonably be expected to occur** as a result of the development for which SC is required in providing restoration of and post restoration of the site, considering both the prospect of immediate remediation, or the alternative of continued operations under separate consent under s.37L of the Act, following consideration by the Competent Authority. It is understood that continued operational development whilst not part of the SC application, is an outcome that could also be "reasonably expected to occur" and warrants consideration in line with legislative direction. It is envisaged that the potential for continuation of use of the site, in line with the environmental parameters previously assessed, would continue to be environmentally acceptable. It is not intended to duplicate the s.37L application and its associated EIAR in this document, but outline consideration will be provided on this basis to cover all reasonable expectations.

It is reasonable to suggest that there would be no change anticipated from the continuation of the associated manufacturing operations on the site, i.e. existing noise emissions will remain the same. Any proposed extraction development is likely to be in accordance with predictions previously assessed for extraction at the quarry site and if anything future noise levels should be lower as development descends to lower depths allowing for increased attenuation by quarry walls. Specific noise modelling is provided in the accompanying s.37L application for extraction at the quarry site to assess specific future noise impacts, with the NIA for the proposed development

concluding that the continued and future operations proposed would not result in any significant effects upon the environment.

In terms of the alternative scenario which can be reasonably expected to occur, should existing quarrying and associated manufacturing operations on the site cease in line with SC requirements, noise levels from de-commissioning of the industrial structures in the northern area of the Tromman Quarry site and / or the regrading of the benches in the existing extraction area and subsequent infill with groundwater will be short-term in their nature. Such activities could be subject to a higher noise limit of 70 dB(A) as distinct from normal site operations. Such activities include overburden removal, bund construction, restoration works, de-commissioning of plant and equipment, etc. typically, such works will be carried out during an 8 week window per annum. It is considered that these short-term works can be implemented now in accordance with the restoration concept plan for the site despite the unauthorised works and are not considered likely to result in any significant effects upon the environment.

7.6 Monitoring

Quarterly noise monitoring surveys such as those that have been undertaken since January 2010 by Byrne Environmental at the Tromman Quarry site will continue. The noise monitoring surveys will continue to be carried out to evaluate and assess the noise impacts that the quarry site activities have on the local receiving noise environment and to assess compliance with standards contained within the former Planning Conditions *(Planning Permission Ref. TA/900976 Condition 12)*. The noise monitoring survey will continue to be conducted according to *ISO 1996-2, 2017 Acoustics –*

Description, Measurement and Assessment of Environmental Noise and with reference to the 2016 EPA publication, "*Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)*.

7.7 Conclusions

The quarterly noise monitoring surveys that have been undertaken since 2013 until 2023 by Byrne Environmental at the Tromman Quarry site typically report that '*Quarry noise faintly audible'* or '*Quarry noise not audible*'. The periodic noise monitoring surveys that have been undertaken since November 2014 at Kilsaran Quarry directly adjacent to the Tromman Quarry site indicate the cumulative noise from the operation of the two adjacent quarries is not having a significant noise impact at the nearest residential properties to the sites. Therefore, the existing operations at the Tromman Quarry site, as predicted in Noise Impact Assessments accompanying previously submitted Environmental Impact Statements, is not having a significant noise impact at the nearest residential properties to the site. The addition of the unauthorised structures in the period post 2013 have not noticeably altered the monitored noise levels at the surrounding noise monitoring locations and predicted noise levels due to the cumulative noise from the operation of the quarry void and the associated manufacturing operations in the northern area of the Tromman Quarry site indicate that the current operations have not and are not having a significant noise impact at the nearest residential properties.

The impacts that have occurred, are occurring and can reasonably expected to occur have been assessed and do not give rise to any significant environmental impact, given that ongoing monitoring has confirmed operations consistently have cumulatively operated below the guideline figure provided for in the DOEHLG 2 004 recommended levels.

With reference to the existing vibration target levels as provided for in the DoEHLG Guidance, the site has operated in full compliance for the past 10 years, and in all likelihood will continue to do so. If the site is required to be restored and the structures removed there is no opportunity for significant impact as a result of blasting. This outcome has been previously assessed and remains valid within the extant restoration concept.

However, if the reasonable alternative is that the site is permitted at least to remove the previously assessed resources then the previous predictions and the subsequent blast vibration monitoring undertaken, has illustrated that the quarrying activities have operated within these target levels and therefore it can be expected to continue to do so, if permitted.

8.0 BIODIVERSITY

8.1 Overview

Woodrow APEM Group (Woodrow) was appointed to compile the remedial Ecological Impact Assessment (rEcIA) report on behalf of Quarryplan and their client Keegan Quarries Ltd. The report provides the detailed assessment to inform the production of the remedial rEIAR, which accompanies the SC application by Keegan Quarries Ltd for SC for unauthorised construction of structures in the concrete products manufacturing area in the northern part of the site and the unauthorised quarrying operations post the 5th of August 2018 at Tromman Quarry, Tromman, Rathmolyon, Co. Meath.

The full-length version of the rEcIA for this proposal is included as Appendix 8.1 and the Remedial Natura Impact Statement (rNIS) is held as a standalone document submitted as part of the SC application package.

8.1.1 Purpose of ecological impact assessment

The rEcIA can be considered as having three main purposes:

- to provide an objective and transparent assessment of the ecological effects of a development or activity;
- to permit objective and transparent determination of the consequences of the development in terms of national, regional and local policies relevant to nature conservation; and

- to demonstrate that a development or activity will meet the legal requirements relating to habitats and species.

8.1.2 Legislative and policy context

This report has been undertaken with full account of legislation, policy and guidance relating to species and habitat protection, importance and survey protocol.

8.2 Impact assessment methodology

Due to the requirement for a REIAR in this instance, undertaking the EcIA in a remedial format is slightly more complex; however, the following list provides a useful summary of the process for undertaking an EcIA, as detailed in CIEEM (2018, updated 2022), which has been adapted for remedial purposes.

8.2.1 Identifying ecological features within the zone of influence

Information acquired during the desk-study and field surveys determines the ecological features potentially affected by the unauthorised development, and as such occur within its 'zone of influence'. The zone of influence depends on the type of development that has taken and is taking place, the presence of ecological connections and pathways, and ecological receptors that may be sensitive to such impacts.

8.2.2 Evaluating ecological features within the zone of influence

Those ecological features within the zone of influence such as nature conservation sites, habitat or species are evaluated in geographic hierarchy of importance. The approach employed for this generally follows that set out in a guidance document on EcIA produced by the Republic of Ireland National Roads Authority. Only Important Ecological Features (i.e. those features evaluated as being of Local Importance (Higher Value) or greater) within the zone of influence are assessed with respect to potential impact.

8.2.3 Significant effects on important ecological features

For the purpose of rEcIA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for those ecological features which have been identified as being an important feature of the site ("Important Ecological Features"). 'Significant' effects are qualified with reference to the appropriate geographic scale (CIEEM, 2018, updated 2022).

8.2.4 Assessment of residual impacts and effects

After characterising the potential impacts of the development and assessing the potential effects of these impact on the 'Important Ecological Features', mitigation measures are proposed to avoid and / or mitigate the identified ecological effects. Assessment of the residual impacts and effects is then undertaken to determine the significance of their effects on the 'Important Ecological Features'.

8.2.5 Assessment of cumulative impacts and effects

Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018, updated 2022).

8.3 Ecological survey methodology

Surveys of the terrestrial ecology at the site, were undertaken following specific guidelines for the relevant target species. The importance of the habitats and species present is evaluated using the Chartered Institute of Ecology and Environmental Management Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (CIEEM, 2018, updated 2022).

8.3.1 Desk based review of biological records

Assessment of the 2013-18 baseline conditions were based on desk-based review of ecological and hydrological sections within the EIS (May 2009) updated in 2023 (BCL Hydrogeologists Ltd) for the quarry extension, along with viewing of sequential ortho-imagery.

For the additional baseline (2018/2019 and 2023) assessment, a desk-based review of biological records for the area was undertaken utilising information available from the National Biodiversity Data Centre (NBDC).

8.3.2 Surveys undertaken

The quarry was visited twice during 2018 and twice in 2019 on the following dates:

- Visit 1: 28th August 2018 Surveyor: Kate Bismilla
- Visit 2: 16th October 2018 Surveyor: Mike Trewby
- Visits 3-4:18-19th June 2019 Surveyor: Mike Trewby

Ecological surveys undertaken included habitats, terrestrial mammals, bats (foraging and roosting), breeding birds, amphibian and protected invertebrate suitability, and alien invasive species.

A number of subsequent visits were made during the summer of 2023 in order to provide a contemporary update to the ecological baseline at the site. The details of these visits are also outlined below:

- Visit 1:12 July 2023 Surveyor: Bruno Mels
- Visit 2: 01 August 2023 Surveyor(s): Oisín O'Sullivan & Frederico Hintze
- Visit 3: 03 August 2023 Surveyor: James O'Connor
- Visit 4: 10 August 2023 Surveyor(s): Giulia Mazzotti & Bruno Mels

These visits entailed the following:

- Breeding birds and updated mammal survey.
- Update to the distribution of habitats on-site.
- Bat surveys, comprising an assessment of the potential roost feature (PRF) on-site as well as an activity survey (by means of five static detectors deployed over 13 nights).
- Update on the non-native invasive species occurring within the site.

8.3.3 Limitations

The 2019 surveys, undertaken within optimal timing for breeding birds, bats and habitats, complemented the 2018 surveys. Given the location of the development, the habitats present on the site and the long-established nature of the development, it is considered that desk-based and ecological field surveys in 2018 and 2019 are sufficient to assess the retrospective ecological impacts.

While the majority of 2023 surveys adhered to the recommended timeframe for target species and habitats, programme constraints hindered the surveying of breeding birds until mid-July and August, falling outside the optimal survey period (April to June). However, it is important to note that the primary aim of these surveys was to provide a contemporary update to data obtained in 2018.

No targeted surveys for amphibians were undertaken in 2023, given that the site was considered to be largely unsuitable for amphibians during the 2018/2019 surveys.

8.4 Scoping - study areas and assessment periods

Due to the primarily retrospective nature of the project to be assessed, the scope of the survey area and time periods require adjustment to match with the different phases of the project to be assessed, as laid out in Table 8.1 below.

Study area - activities to be assessed	Assessment period	Significant effects/ impacts which -
Northern part of site - Pre-cast concrete manufacturing facility	Baseline: 2013 (2013 to Aug 2018)	- have occurred
Whole site - All site activities assessed cumulatively	Additional baseline: 2023 (Aug 2023 to submission of SC)	- are occurring
Whole site - two alternatives: a) immediate remediation b) continued operations under separate consent	Immediate remediation and site restoration and post-restoration and continued consented operations under separate approval.	- are reasonably expected to occur

Table 8.1 Scope of the survey period and time periods to be assessed

8.5 Designated sites with potential ecological / hydrological connections to the development

8.5.1 European Sites

The EPA Guidelines (EPA May 2022) states in section 3.3.5 that:

> "*A biodiversity section of an EIAR, for example, should not repeat the detailed assessment of potential effects on European sites contained in a Natura Impact Statement, but it should refer to the findings of that separate assessment*".

This approach has been adopted and the conclusions of the rNIS which accompanies this rEIAR are referenced. No part of the application site lies within a designated Special Area of Conservation (SAC) or Special Protection Area (SPA). As a result of hydrological connections two

European Sites were brought through to Stage 2 Appropriate Assessment:

- River Boyne and River Blackwater SAC.
- River Boyne and River Blackwater SPA.

The concluding statement of the rNIS is as follows:
"The two European Sites, and associated QI/SCIs listed above, were assessed as part of the AA process. This process found that whilst a number of potential impacts pertaining to water quality were identified, including in-combination impacts, the mitigation measures presented in Section 6 eliminate the potential for any adverse effects.

Taking into account the best available scientific knowledge, applying the precautionary principle, and considering the conservation objectives of the relevant European Sites, it is concluded that the three quarry proposals, whether on their own or in conjunction with other plans or projects, do not pose or have not posed an adverse impact on the integrity of any European Site".

8.5.2 Natural Heritage Areas

No part of the application site lies within an NHA or pNHA. There is one NHA within 15 km of Tromman Quarry and six pNHAs. These sites are located between 2 to 14 km from the quarry and there is considered to be no ecological or hydrological connectivity between these sites and the quarry.

8.6 Baseline conditions

8.6.1 Baseline conditions: 2013 – pre-cast manufacturing facility

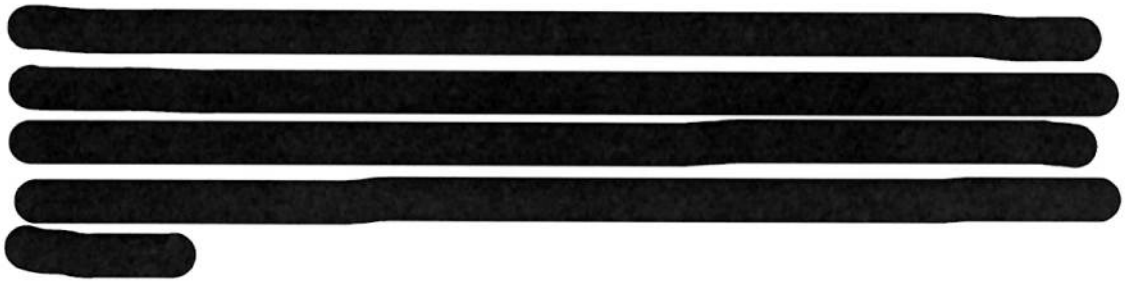
The retrospective 2013 baseline only applies to the area occupied by the pre-cast concrete manufacturing facility. This facility occupies the northern section of the Tromman Quarry site. Sequential OSi aerial imagery (1992, 2000, 2005) shows the area was claimed from a single field of improved agricultural grassland GA1, with conversion starting around 2003. Aerial imagery (Google Earth Pro) shows that by 2009 the concrete hardstanding with associated roads and industrial buildings had been extended across the entirety of the former northern field, well before the baseline 2013 year for this assessment.

The original hedgerows WL1/ treelines WL2 on the periphery of the site and the open drains (small streams) FW4 on the western and northern boundaries of the facility have been retained. By 2013 a large ditch FW4 with associated banks formed part of the eastern site boundary, along with remnant hedgerows WL1 and treelines WL2. Prior to the construction of concrete settlement tanks (2016/17) this ditch formed the settlement lagoons. At the time of the 2013 baseline only the watercourses, hedgerows and treelines on the periphery of the northern part of the site remained devoid of development and represent the only areas of potential value to wildlife. At this time these linear features are likely to have provided foraging and commuting areas for bats and nesting sites for birds.

8.6.2 Baseline conditions: 2018 – whole quarry

Site visits undertaken in 2018 and 2019 provide the information for the baseline conditions of the additional baseline, which assesses the quarry and the pre-cast concrete manufacturing facility as a whole.

Terrestrial mammals



Bats

Bat surveys were undertaken on the night of 18th-19th June 2019 by means of a transect, static bat detectors and a roost emergence survey. These surveys revealed the presence of common and soprano pipistrelle, Leisler's bat, brown long-eared bat, and Myotis species at the site. As would be expected, activity was generally concentrated around the more suitable habitats on the periphery of the site, with limited activity within the core disturbed or built-up parts of the site. There was no roost recorded on site.

Birds

Birds recorded during the site visits were mostly common, widespread species including (* indicates breeding behaviour observed): lesser black-backed gull, raven*, hooded crow, rook, jackdaw, magpie, wood pigeon, feral pigeon, starling, swallow*, house martin, sand martin, wren, robin, goldcrest*, blackcap*, whitethroat*, chiffchaff*, willow warbler*, great tit*, coal tit*, blue tit*, blackbird*, song thrush*, mistle thrush, pied

wagtail, meadow pipit*, chaffinch*, goldfinch*, linnet*, yellowhammer*. In addition, there is a territorial pair of peregrines at the site, which are likely to be using the site, or the adjacent quarry for breeding. A raven nest was also located at the site. The only Red listed species of conservation concern (Colhoun & Cummins 2013) recorded during site visits were meadow pipit and yellowhammer. The hedgerows on the periphery of the site, in close proximity to cereal fields have the potential to offer nest sites for yellow and a singing male was recorded at the south-eastern boundary of the site. One possibly two pairs of meadow pipit were nesting on the suitably vegetated lower levels of the large spoil heap in the centre of the site.

Reptile and amphibians

A search of the NBDC database found that the only reptile or amphibian records for the 10-km squares covering Tromman Quarry were for common frog (*Rana temporaria*). It is likely that any standing water within the site will be inhabited by frogs during the breeding season. The settlement tanks on the eastern boundary of the site, were assessed as unsuitable for smooth newt (*Lissotriton vulgaris*) breeding ponds.

Flora and habitats

No rare plants listed under the Flora Protection Order 1999 were located within Tromman Quarry during site walkover and data searches (NBDC). The following habitat types were recorded as occurring within the site:

- FL8 Other artificial lakes and ponds
- W4 Drainage ditches
- GA2 Amenity grassland
- WD1 (Mixed) broadleaved woodland
- WS1 Scrub
- WS2 Immature woodland
- WS3 Ornamental/ non-native scrub
- L1 Hedgerows
- WL2 Treelines
- ED2 Spoil and bare ground
- ED3 Recolonising bare ground
- ED4 Active quarries and mines
- BL2 Earth banks
- BL3 Buildings and artificial surfaces

The location of these at the site is shown in Figure 8.1

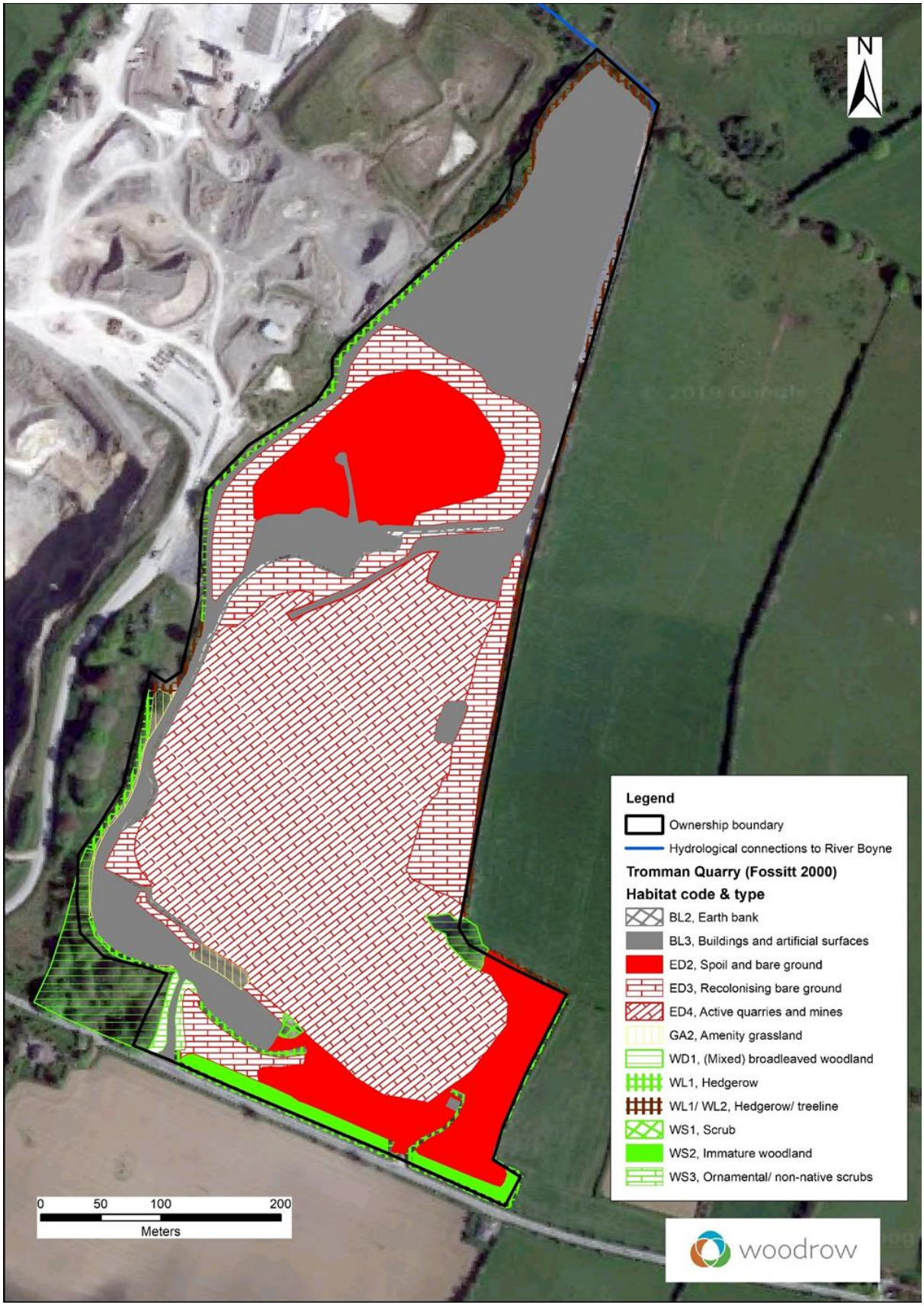

N
Legend
Ownership boundary
Hydrological connections to River Boyne
Tromman Quarry (Fossitt 2000)
Habitat code & type
BL2, Earth bank
BL3, Buildings and artificial surfaces
ED2, Spoil and bare ground
ED3, Recolonising bare ground
ED4, Active quarries and mines
GA2, Amenity grassland
WD1, (Mixed) broadleaved woodland
WL1, Hedgerow
WL1/ WL2, Hedgerow/ treeline
WS1, Scrub
WS2, Immature woodland
WS3, Ornamental/ non-native scrubs
0 50 100 200
Meters
woodrow

Figure 8.1. Habitat types mapped in Tromman Quarry, as classified in Fossitt (2000)

Invasive species

No high impact invasive plant species (as listed by NBDC) were recorded during the site visits. Likewise, there were no plant species recorded on Third Schedule applying to non-native species subject to restrictions under Regulations 49 of S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011.

8.7 Baseline Conditions 2023- Whole Quarry

Additional site visits were undertaken in 2023, in order to provide a contemporary update to the ecological baseline already established in 2018/2019. As before, these visits assessed the quarry and pre-cast concrete manufacturing facility as a whole.

Terrestrial Mammals

Several mammal trails were identified as part of the mammal survey. However, apart from one trail located in the east of the site, most were associated with the woodland located outside the southern boundary. [redacted] The hardstand surrounding the manufacturing facility in the north of the site means that it is difficult to track mammals there. In any case, this area is considered to be largely unsuitable for most mammal species, with the possible exception of

rodents.

Bats

Bat surveys were undertaken on 01 August 2023 by means of five deployed static bat detectors. Five species of bat were detected as part of the 2023 surveys, which is the same number of species and the same assemblage of bats recorded in 2019.

Potential roosts within the site were notably scarce, with one moderately sized dead tree covered in ivy being the only main option. Additionally, the abandoned gate lodge situated in the small southern woodland offered some limited suitability as a roost. A few other trees with ivy cover and occasional older specimens providing deadwood and knots were also present. However, akin to the findings in 2019, the majority of these sites were considered to have low suitability due to their limited sheltering capabilities.

The red-brick garage positioned in the southeast corner of the site, which underwent examination during the 2019 baseline assessment, has been subsequently demolished, along with *c.* 60 m of non-native beech hedgerow. An emergence survey conducted at this location in 2019 found no bats emerging from the building.

Birds

Two bird surveys were undertaken at the site during the 2023 site visits, occurring on 12 July and 03 August, respectively. A full list of the birds recorded in and around the site as part of the 2023 surveys, including their current conservation status is provided with the EcIA. As before, birds recorded during the 2023 site visits were mostly common,

widespread species, and typical for the habitat available within the site.

Reptiles and Amphibians

Given that the previous baseline assessment of 2018/2019 found the site to be largely unsuitable for reptiles and amphibians (with the exception of common frog), there were no targeted surveys performed as part of the 2023 site visits.

Flora and Habitats

A site walkover performed on 10 August 2023 sought to provide an update to the habitats on-site. The findings from this survey found that the majority of habitats comprised those already described as part of the 2018 walkover. No rare plants listed under the Flora (Protection) Order, 2022 (S.I. No. 235 of 2022) were located within Tromman Quarry during the 2023 habitat survey, nor were there any such records found on the NBDC database.

Invasive Species

Similar to the 2018/2019 findings, there were no plant species recorded that are included on the Third Schedule of Regulations 49 and 50 (not yet in effect) of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011).

8.8 Evaluation of important ecological features within the zone of influence

Table 8.2 overleaf summarises the Important Ecological Features of

interest within the zone of influence of the development. Habitats and species which have been assessed to be of Local Importance (Higher Value) or above within the application site, have been listed as Important Ecological Features as shown in Table 8.2 below. This evaluation covers the development as whole.

Important Ecological Feature	Evaluation
Designated Areas	
River Boyne and River Blackwater SAC River Boyne and River Blackwater SPA	International Importance
Habitat	
GS2 Dry meadows and grassy verges	Local Importance (Higher Value)
WS1 Scrub	Local Importance (Higher Value)
WS2 Immature woodland	Local Importance (Higher Value)
WL1 Hedgerows	Local Importance (Higher Value)
WL2 Treelines	Local Importance (Higher Value)
BL2 Earth banks	Local Importance (Higher Value)
Species	
Birds	Local Importance (Higher Value)
[redacted]	[redacted]
Bats	Local Importance (Higher Value)

Table 8.2. Important Ecological Features and their Evaluation

Invasive Alien Species (IAS) are considered within the impact and mitigation sections below.

8.9 Impacts which have occurred

The following impact sources have been judged as having had the potential to arise over the baseline period (2013-August 2018 concrete manufacturing and; August 2018-2023 whole quarry activities).

8.9.1 Construction stage impact types / sources

Contamination of surface water / ground water

Without mitigation, chemicals and materials stored and used on the site during the construction of the shed (such as fuel, oils, cement, sand, aggregate and concrete); as well as material exposed during excavation works, could have resulted in the contamination of surface water run-off and consequently resulted the in the degradation of water quality in the vicinity of the site.

Without mitigation, spillages could have occurred during the pouring of concrete foundations and/or during routine plant maintenance, improper storage and/or accidental spillages of hydro-carbons during the construction works. Contaminants being washed into nearby watercourse could lead to a serious impact on water quality and consequently the habitats and species present. At this site, without appropriate control measures contaminants would enter the stream flowing along the northern boundary of the site, which is hydrologically linked, although distantly (c. 10 km) to the River Boyne and River Blackwater SAC and River Boyne and River Blackwater SPA.

At the time of construction, the concrete manufacturing area was fully paved and considered an impermeable surface (hydrological assessment report - BCL Hydrogeologists Ltd 2019), thus eliminating the risk of contamination to ground water in the vicinity of the works. In addition, there were control measures in place to mitigate against contamination of surface waters including the construction of a surface water and ground water management system in 2009 (see

Environmental Management System EMS produced by Byrne Environmental). In relation to protecting surface waters within the Keegan Quarry site as a whole, the EMS states:

The following general guidelines have been considered in designing an effective surface water management system for the site.

- *Solid inert waste will be disposed of by licensed removal from the site or by recycling on the site in a designated inert waste recycling location and in a manner that will not impact on surface waters.*
- *Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment in the designated storage location. Drip trays, mobile bunds and permanent bunded areas will be installed to minimize the potential for pollution of surface water bodies.*
- *Fuelling and lubrication of vehicles and mobile plant and equipment will not be carried out close to water courses and will be conducted on concrete surfaced areas.*
- *All refill points for fuels, lubricants, hydraulic fluids or any other hydro-carbon based liquids will be located in a hardstanding bunded area.*
- *Any spillage of fuels, lubricants of hydraulic oils will be immediately contained and any contaminated soil removed from the site and properly disposed of by an appropriately licensed contractor.*
- *Foul drainage from site offices, canteen and toilets will be discharged to the biocycle system and percolation area.*
- *All concreted surfaces used for refuelling will be drained to a petrol/oil interceptor unit.*
- *Sites for use as storage areas, machinery depots, site offices, internal haul roads or the disposal of spoil will be located as far as is practicable from watercourses.*
- *All surface water collected on-site shall be diverted to the surface water settlement pond prior to discharge via a petrol/oil interceptor to surface water.*
- *No water shall be pumped from the quarry without passing through the settlement pond system*
- *The settlement lagoons shall be inspected weekly by the Site Manager and all settled solids shall be removed by pumping as*

required to ensure the capacity and efficiency of the lagoons is maintained at all times.

- *Absorbent materials such as absorbent booms and vermiculite will be held on site and any spillages of organic liquids such as oils, greases etc will be contained and cleaned up immediately. The contaminated absorbent material will be correctly stored in a designated area on-site prior to being collected and disposed of by an approved contractor.*
- *All accidental discharge incidents shall be immediately reported to the environment department of Meath County Council by the Quarry Manager.*

On the basis that the mitigation measures outlined in the EMS were in place, and all surface runoff was collected in the settlement lagoons for discharge via the consented discharge point (as covered by Trade Effluent Discharge Licence Ref. 04/2), the risk of local watercourses and ground waters becoming contaminated as a result of construction activities was low.

Disturbance of foraging/breeding sites

Without mitigation, there was potential for construction activities to result in disturbance to foraging / breeding fauna, birds in particular, utilising the hedgerow/ treeline directly adjacent to the new shed. However, construction commenced after the end of the bird breeding season (September 2016) and was completed prior to the start of the 2017 breeding season (March 2017). Therefore, it can be definitively concluded that construction did not impact on breeding birds. The potential for disturbance emanating from construction activities impact on foraging fauna, if any, was short-term given the construction period of approximately 6 months. During the construction period the potential impact of disturbance to birds and other fauna foraging in the area was assessed as negligible.

8.9.2 Operation of manufacturing facility – impact type / sources

Contamination of surface water / ground water

Without mitigation, chemicals and materials stored and used on the site during the manufacturing process (such as fuel, oils, cement, sand, aggregate and concrete) could have resulted in the contamination of surface water run-off and consequently resulted the in the degradation of water quality in the vicinity of the site.

While the production processes appear highly controlled, spillages could occur during the pouring of concrete into pre-cast moulds, washing of equipment/ machinery and/or during routine plant maintenance, improper storage and/or accidental spillages of hydrocarbons. Of particular concern would be escape cement and concrete fragments and these contaminants being washed into nearby watercourse could lead to a serious impact on water quality and consequently the habitats and species present. At this site, without appropriate control measures contaminants would enter the stream flowing along the northern boundary of the site, which is hydrologically linked, although distantly (c. 10 km) to the River Boyne and River Blackwater SAC and SPA.

Although not specifically referenced in the EMS for Keegan Quarry, it is assumed that control measures outlined for mitigation against pollution to surface water and ground water (see quoted texted above) extended to the operation of the pre-cast concrete manufacturing facility. In relation to the plant, the EMS states:

The operation of the precast concrete products plant has a minimal impact on the receiving environment as all manufacturing activities occur within the purpose built factory unit.

Assuming the mitigation measures outlined in the EMS were in place and that all surface runoff was collected in the settlement lagoons (latterly newly constructed tanks 2016-17) for discharge via the consented discharge point (as covered by Trade Effluent Discharge Licence Ref. 04/2), the risk of local watercourses and ground waters becoming contaminated as a result of on-going concrete manufacturing operations was low. It is considered that this is likely given there were no reported incidents during this monitoring period.

Shading of habitats by new shed

The 2016/17 expansion of the pre-cast manufacturing unit (the new shed) has resulted in increased levels of afternoon shading along the eastern boundary of the site. This has the potential for altering species composition in favour of shade tolerant species, however this is not considered a significant impact.

Dust deposition on flora

While the manufacturing process is enclosed within sheds and as such will not generate dust, the associated activities, such as delivery of materials have the potential to generate dust in the absence of mitigation. Fugitive dust is typically deposited within 100 to 200m of the source; the greatest proportion of which, comprising larger particles (>30microns) is deposited within 100m. Large amounts of dust deposited

on vegetation over a prolonged period results in adverse effects on plant productivity, which can lead to degradation of sensitive habitats. Prevailing weather conditions have a bearing on how much dust is generated and deposited, with factors such as rainfall supressing the agitation of dust and may also have cleansing effect, washing deposits of foliage.

Dust deposition starts to affect the more sensitive species at levels above 1000 mg/m^2/day, which is significantly higher than the upper limit permitted under the planning conditions for the site – set at 350 mg/m^2/day. To ensure this threshold is not surpassed control measures are employed throughout the site to suppress the generation of dust – see EMS. As outlined in Chapter 7 the ongoing monitoring has confirmed operations consistently have cumulatively operated below the 350 mg/m^2/day guideline figure provided for in the DOEHLG 2004 recommended levels. As such it can concluded that dust generation relating to operational activities is adequately controlled and the impact on flora in the vicinity of the quarry will be minimal. In addition, there are no sensitive territorial habitats adjacent to the development.

Light pollution impacting on foraging bats

It is likely that the extension of the manufacturing facility, through construction of the shed, has increased the Lux levels on the site and has resulted illumination of previously unlit areas. Artificial lighting can attract insects, which in turn can attract some faster flying bat species, like Leisler's bat and pipistrelle species, providing a food source for these species and potentially a competitive advantage over more light sensitive bat species. The slower fly species, like Myotis sp. and brown-

long eared bats may be displaced from favoured foraging areas or commuting routes by the introduction of artificial lighting. Artificial lighting can also displace roosting bats.

The likelihood of any suitable roost sites in the vicinity of the new shed is low, based on current habitat availability and it has been judged that this has not altered over the baseline period (2013-23). Therefore, the potential for the new lighting regime impacting on roosting bats can be discounted. In terms of habitat availability for foraging bats in the vicinity of the shed, the hedgerow/ treeline along the eastern boundary has been highlighted as providing potential foraging habitat and it is possible that light sensitive species may be displaced from this area. However, in the context of substantial areas of similar habitat for foraging bats existing outside of the site, the potential loss of foraging habitat is deemed to be insignificant at a local level.

8.9.3 Quarrying Activities

As extraction activities have mainly been focused within the quarry floor in the southern extent of the quarry (with a new face created in the quarry floor), coupled with the fact that the gradient on-site naturally draws water away from the adjoining watercourses situated to the north, then there is not expected to have been any direct surface runoff associated with quarrying activities. As of 2019, data derived from routine monitoring of the quarry discharge point, demonstrated that discharge largely complied with the specified discharge limits set out in the discharge consent (Trade Effluent Discharge Licence Ref. 04/2).

The south-eastern quarry expansion, led to the removal of former quarry-top embankment, hedgerows, treelines, improved agricultural grassland, and a house during site preparation. However, these activities occurred within the consented timeframe for quarrying (2011-2017), which was assessed for ecological impacts prior to August 2018. As activities have since been concentrated on the lower benches of the quarry, there has been no direct loss of any sensitive habitat since the August 2018 baseline. An exception to this includes the removal of a garage and some non-native hedgerow that were considered to be of limited ecological value.

As per the above, assuming that the control measures outlined in the EMS for the control of dust arising from quarrying activities have also been adhered to, then it is considered that the impact on flora in the vicinity of the quarry is minimal.
The quarry has not laterally expanded beyond its previously permitted limits with extractive operations concentrating on the lower benches toward the centre of the site, with the faces heading in a generally southern direction. Accordingly, there is considered to have been limited risk of disturbance to fauna associated with the quarry.

8.9.4 Impacts which have occurred on Designated Areas

River Boyne and Blackwater SAC and River Boyne and Blackwater SPA fall within the potential zone of influence because of the existing hydrological link and the potential for impact on water quality on the sites, and consequent impact on the Qualifying Interests.

The rNIS concluded that the distance of the hydrological link to Natura 2000 sites downstream of the development (c. 10 km) in combination with the control measures within the site, mean that there is no potential for adverse impacts on the integrity of the River Boyne and Blackwater SAC or the River Boyne and Blackwater SPA.

8.9.5 Impacts which have occurred on Habitats

From examination of aerial imagery there has been no direct impact in terms of habitat loss to hedgerows or treelines. Aerial imagery shows that hedgerows and treelines on the periphery of the site have been retained throughout the operational phase of pre-cast concrete manufacturing, including the 2016/17 expansion of the pre-cast manufacturing unit (the new shed) along the eastern boundary of the site. Increased afternoon shading of the hedgerow/treeline along the eastern boundary has occurred due the construction of the new shed; and while this has the potential for altering species composition in favour of shade tolerant species, this is not considered a significant impact. Likewise, given existing control measures and planning conditions in relation to permissible levels for dust generation the impacts of dust settling on foliage is not considered a significant impact.

8.9.6 Impacts which have occurred on Fauna

[redacted]

Birds

The linear features on the periphery of the concrete manufacturing site (hedgerows/ treelines/ drains/ steams) provide nesting and foraging habitat for birds. These features have been retained throughout the operational phase of pre-cast concrete manufacturing, including the increase in plant and structures to include the 2016/17 expansion of the pre-cast manufacturing unit (the new shed) along the eastern boundary of the site. The built environment (concrete hard stand and sheds) that dominated this area is of limited value for birds, with the exception of some species that nest on/in man-made structures. By necessity these species become readily habituated to the human activity, including manufacturing. It is not considered that expansion of the processing plant (2016/17) and on-going manufacturing posed any significant impacts upon the local bird population.

Bats

The linear features on the periphery of the concrete manufacturing site also provide foraging habitat for bats. These features have been retained throughout the operational phase of pre-cast concrete manufacturing. The built environment (concrete hardstand and sheds) that dominated this area is of limited value for bats.

As discussed above, the potential for the new lighting regime to impact on roosting bats was discounted and the potential loss of foraging habitat is deemed to be not significant.

8.9.7 Consideration of mitigation and enhancement measures

Without existing mitigation in place, the activities occurring within pre-cast concrete manufacturing facility had the potential to have significant effects on a single ecological receptor within the zone of influence of the development, through impacting water quality. The EMS for the site provides the list of mitigation measures to control against contamination of surface water and ground water, whereby protecting watercourses in the local area.

In addition to providing compliance assurance, continued monitoring of the discharge point has allowed for the implementation of further measures to protect local watercourses and ongoing improvement to the current drainage infrastructure on site. This is highlighted by upgrades that have been provided to the drainage infrastructure in 2023, notably the addition of further settlement facilities along the eastern boundary of the site.

Ongoing operations did not impact on any habitats which remained in the northern part of the site, such as hedgerows, treeline and watercourses by avoiding these areas, as they are on the periphery of the site.

8.9.8 Residual impacts and effects on important ecological features

Negative residual impacts are not considered to be ecologically significant.

8.10 Impacts that are occurring

This section assesses the potential ecological impacts that are currently being experienced at the site at the time of writing in 2023.

8.10.1 On-going operational (quarrying) impact types / sources

Contamination of surface water / ground water

As per the previous section, without mitigation, quarrying operations near water have an associated risk of pollution from fuel spillages, oil leakages and other accidents with potential to lead to serious impacts causing the contamination of surface water run-off and the degradation of water quality in the vicinity of the site and consequently impacting the habitats and species present in any affected waterbody.

Given that the current mitigation measures outlined in the Keegan Quarries Ltd. EMS remain in place, and discharge from the site is monitored on a regular basis, the risk of pollution to local watercourses and groundwaters is still considered to be low.

Habitat loss and fragmentation

All preparatory works for extraction occurred within the consented (previously assessed for ecological impacts) timeframe for quarrying

(2011-2017). Thus, there has been no direct loss of habitat resulting from quarrying activities as of the 2023 baseline assessment.

Dust deposition on flora

Continued employment of the control measures set out in EMS, is likely to ensure that quarry operations continue to operate below the 350 mg/m^2/day threshold, and as such, minimise the risk of dust depositing on foliage. Additionally, as of 2023, there are no sensitive terrestrial habitats adjacent to the development.

Disturbance to fauna

As the quarry has not laterally expanded and given that quarrying activities were already generating ecological disturbance prior to the 2023 baseline assessment, there is considered to be limited risk of disturbance to fauna within the vicinity of the site.

8.10.2 Impacts occurring on Designated Areas

River Boyne and Blackwater SAC and River Boyne and Blackwater SPA fall within the potential zone of influence because of the existing hydrological link and the potential for impact on water quality on the sites, and consequent impact on the Qualifying Interests.

The rNIS concluded that the distance of the hydrological link to Natura 2000 sites downstream of the development (c. 10 km) in combination with the control measures within the site, mean that there is no potential

for adverse impacts on the integrity of the River Boyne and Blackwater SAC or the River Boyne and Blackwater SPA.

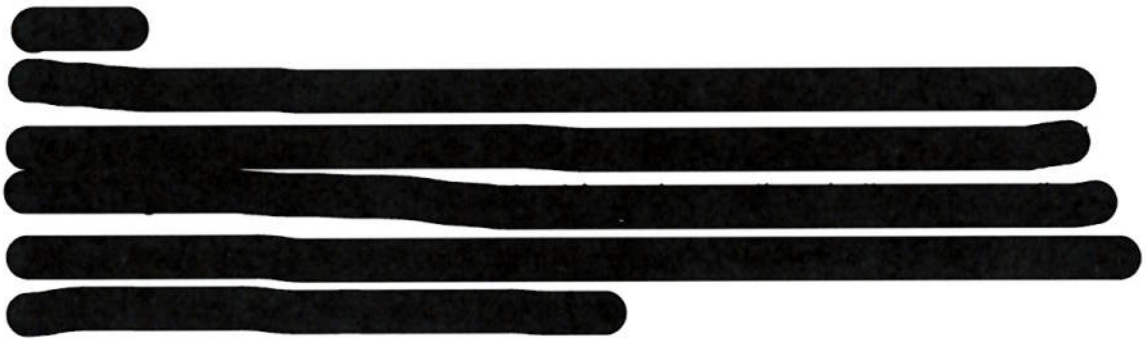
8.10.3 Impacts occurring on Habitats

As the quarry has remained within its previously permitted boundaries and most activities have concentrated on the lower benches within the southern part of the quarry, there are presently no ongoing impacts to any habitat evaluated as an Important Ecological Feature.

8.10.4 Impacts occurring on Fauna

Birds

The available evidence suggests that there are minimal significant impacts to birds on-site due to the preservation of foraging and nesting habitats, including the hedgerows / treelines that demarcate the site, as well as the scrub and woodland that occur within and adjacent to the site boundaries.



Bats

The 2023 baseline assessment shows continued use of the site by bats for

commuting / foraging. This is largely due to the retention of linear features and woodland, however data collected next to the spoil heap in the centre of the site, also shows that bats (e.g. Leisler's) are also using open areas of the quarry for foraging. Thus, there is not considered to be any significant impacts occurring on bats as a result of quarry operations.

8.10.5 Consideration of mitigation and enhancement measures

The EMS for the site provides the list of mitigation measures to control against contamination of surface water and groundwater, thereby protecting watercourses in the local area. Recent upgrades to the existing drainage infrastructure is likely to have resulted in improved environmental performance on-site, which is being assessed through routine monitoring of the discharge point.

8.10.6 Residual impacts and effects on important ecological features

Negative residual impacts are limited to negligible to minor long-term impacts. These are not considered to be ecologically significant. Residual impacts will not result in any significant effects on Important Ecological Features within the zone of influence.

8.11 Impacts that can reasonably be expected to occur

The final stage of the assessment considers the significant effects, or impacts, that can reasonably be expected to occur as a result of the development, considering both the prospect of immediate

remediation, or the alternative of continued operations under separate consent (i.e. s.37L of the Planning and Development Act (as amended)). This section only assesses the potential ecological impacts of immediate site restoration, as the predicted impacts associated with the continuation of operations and extension of the existing quarry are detailed in a separate ecological assessment, which is submitted as part of the s.37L application.

8.11.1 Impacts expected to occur on Designated Areas

The rNIS concluded that the distance of the hydrological link to European Sites downstream of the development (c. 10 km) in combination with the control measures within the site, mean that there is no potential for adverse impacts on the integrity of the River Boyne and Blackwater SAC or SPA. In addition, during restoration of the quarry dewatering activities would cease meaning that discharge and flow into the northern drain would also cease further diminishing any hydrologically link between the site and the SAC/SPA.

8.11.2 Impacts expected to occur on Habitats

The restoration approved for the quarry and the remedial works for the manufacturing facility and the quarry are limited, the overall impact would be positive. The site would be restored for nature conservation through planting and natural regeneration, the range and extent of habitats occurring on the site would increase including, grasslands, transitional scrub, woodland and a lake surround by rocky cliffs, which

will provide opportunities for a range species.

8.11.3 Impacts expected to occur on Fauna

Site remediation will result in positive impacts for wildlife in the area. As disturbance factors including light pollution dissipate and vegetation cover regenerates connectivity through the site will be improved and more sensitive species will re-colonise the area. Species of conservation interest, including bats and peregrine, that occupied the site during the operational phase of the development will not be negatively impacted by the site remediation process. Cliffs providing nesting ledges for peregrines, as well as other species of bird like kestrels and ravens will be retained. Foraging and commuting bats in particular will benefit from an increase in vegetation cover within the site [redacted]

8.12 Cumulative Impacts

Cumulative impacts which have occurred have the potential to include wider contribution to habitat fragmentation, cumulative disturbance and cumulative water quality impacts.

No habitat fragmentation has occurred, or is occurring as a result of the unauthorised works, with linear features around the site (such as hedgerows, treelines and drains) being retained. There is therefore not considered to be any potential for cumulative impacts in this regard. Disturbance to breeding birds, bats and other fauna have also been

considered, and are deemed to be absent or not significant, and are therefore not considered to contribute to wider disturbance in the area.

Despite occasional instances of elevated levels, the ongoing mitigation measures, such as drainage arrangements and settlement infrastructure, have been largely effective at minimising the overall concentration of suspended solids and other pollutants leaving the quarry site. Hence, reducing the overall potential for cumulative water quality impacts within the local watercourses. There are no other issues that are considered to be relevant with respect to potential cumulative impacts for this site.

8.13 Conclusions

Based on the collation of above information, it is considered that activities associated with the pre-cast concrete manufacturing facility and extractive operations at Tromman Quarry have had a low overall impact on the Important Ecological Features identified within the site and its environs. Any potential water quality impacts pertaining to quarry operations have been largely mitigated through existing control measures outlined in the company's EMS. This includes upgrades to the current drainage infrastructure on site as well as regular monitoring of the discharge effluent leaving the site.

There has been no additional loss of sensitive habitat post the period of consent (05 August 2018), with the only exception being the removal of a disused garage and small area of hedgerow in the south-east corner of the site. Regardless, these were assessed as part of surveys performed

in 2019 and considered to have low ecological value. Moreover, none of the habitats on site are particularly rare or of significant ecological importance on a national or European scale.

Given the existing habitats, and the permitted post-operational remedial landscaping and planting works, it is considered that the development shall result in a short to medium term ecological impact throughout operation, which will be negated by the continued implementation of best practice mitigation measures across the site. As a result, the development is not considered to have had, be having or reasonably likely to have any significant impact beyond the local level.

9.0 LANDSCAPE AND VISUAL

This Remedial Landscape and Visual Impact Assessment has been prepared by Mullin Design Associates, Chartered Landscape Architects, for inclusion within a Remedial Environmental Impact Statement to accompany an application for SC. This would address potential landscape and visual impacts arising since 2013 from unauthorised elements associated with the existing quarry and ancillary production operations at Tromman, Co. Meath.

All the Figures referenced in the Landscape and Visual Assessment are included as Appendix 9.1 of this Remedial Environmental Impact Report.

This study has been drafted and overseen by Pete Mullin, BA (Hons) CMLI, MILI ,principal of Mullin Design Associates.. Pete has been a chartered member (CMLI) of the Landscape Institute since 1998. He has experience as employee and consultant for several multinational practices, and set up Mullin Design Associates in 2000.

He is a respected and active member of both the Irish Landscape Institute (ILI) and the UK Landscape Institute (LI). Pete held the role of Policy Consultant for the LI for seven years, working across all of the N.I. councils with environmental policy advisors to influence landscape design related policy. He has held Chair positions in both the NI Landscape Institute and NI Environment Link - Land Matters Task Force.

To date he has been involved with preparation of several hundred Landscape and Visual Impact Assessments, for a wide variety of Annex 1 and Annex 2 projects.
He was part of the team which prepared the Regional Landscape Character Assessment for Northern Ireland on behalf of Northern Ireland Environment Agency (NIEA) in 2015. He has completed numerous planning appeals, and appeared as expert witness at public inquiries, oral hearings and high court cases for several high profile development applications. He is a recognised for his extensive experience within the minerals sector.

9.1 Background and setting

The subject site is located at Grid Reference OS. N 776 497, approx 6km South of Trim and 2km West from the village of Rathmolyon. It is on the north side of the R156 Dunboyne – Ballivor road and falls within the tributary catchment system of the River Boyne (Figure 9.0).

The site is on the Western boundary of landscape character area 'Rathmolyon Lowlands' as described within Appendix 5 of Meath County Development Plan 2021-2027. Details of this character area are discussed in Section 9.2.6

The context of the site is predominately rural / agriculture in character, with a number of small scale commercial woodlands, interspersed with individual dwellings and farmsteads. In addition there are several sites of mineral extraction with associated plant for ancillary production.

Topographically the assessment area is considered rolling lowland with large tracts of the surrounding landscape at approximately 80m AOD (average).

Existing landuse types within a 5km catchment of the site include:

Residential	Rathmolyon village; detached dwellings; farm houses
Transport	R156, R160, R159, R161, Third Class Roads, Lanes and Access tracks
Commercial	Quarries & Ancillary Development, Telecom masts, Power Lines,
Culture/Tourism	Mounds; Moated site; Churches, Graveyards

Within the study area the report will define key locations (visual receptors) that may be potentially impacted by the development and which represent the worst case scenario views of the site; these are identified as:

- Individual Residential Properties; Commercial Properties; Public Buildings
- Roads, Tourist Routes and Viewpoints
- Junctions and Crossroads
- Sites of Cultural/Historic/Visitor significance

This study has been structured and laid out in the following subsections:

- **Method of Assessment** – explanation of how the assessment has been undertaken, with reference to methodology, terminology, assessment criteria, and planning policy.
- **Landscape and Visual Context –** baseline description, classification and evaluation of the existing landscape character containing the application site and an assessment of visual amenity, with identification of visual receptors.
- **Project Description**– description of the development.

- **Impacts** – an outline of landscape and visual impacts which:-
  A Have occurred (Impacts that have occurred since the building of the Concrete Manufacturing facilities in 2013 and quarrying from when it became unauthorised in 2018 to present);
  B- Are occurring (Impacts occurring at present)
  C- May potentially occur. (Impacts that can reasonably be expected to occur in the future- this will be 2 scenarios-
  1. Planning permission is granted under Section 37L for quarrying operations and
  2. Planning permission isn't granted and the site is closed and restored.

- **Summary and Conclusions** – summary of assessment results.

9.1.1 Method of Assessment & Guidelines

The assessment of the landscape and visual impacts for this development are based on the most up to date guidelines provided by

The Landscape Institute, in the 'Guidelines for Landscape and Visual Impact Assessment', (3rd Edition) 2013, and The Countryside Agency and Scottish Natural Heritage – Landscape Character Assessment Guidance for England and Scotland 2002 have been used as important reference documents.

As recommended the landscape and visual assessment incorporates both desk and field studies and has been compiled and interpreted by an experience landscape professional.

Reference has been made to Meath County Development Plan 2021 – 2027 and specifically Appendix 5 - Meath Landscape Character Assessment, Section (Section 8 LCA parts 7-13) which provide a baseline landscape description.

9.1.2 Assessment Criteria

The aim of the landscape and visual impact assessment is to identify, evaluate key effects arising from the unauthorised aspects of the development. The assessment combines **sensitivity** with predicted **magnitude of change** to establish the **significance of residual landscape & visual effects.** These are based on pre-defined criteria as set out in Tables 9.1 – 9.5 below.

Table 9.1 Landscape Sensitivity Criteria	
Class	**Criteria**
High	Landscape characteristics or features with little or no capacity to absorb change without fundamentally altering their present character Landscape designated for its international or national landscape value

	Outstanding example in the area of well cared for landscape or set of features
High-Medium	Landscape characteristics or features with a low capacity to absorb change without fundamentally altering their present character Landscape designated for regional or county-wide landscape value where the characteristics or qualities that provided the basis for their designation are apparent. Good example in the area of reasonably well cared for landscape or set of features
Medium	Landscape characteristics or features with moderate capacity to absorb change without fundamentally altering their present character Landscape designated for its local landscape value or a regional designated landscape where the characteristics and qualities that led to the designation of the area are less apparent or are partially eroded or an undesignated landscape which may be valued locally – for example an important open space An example of a landscape or a set of features which is neutral or mixed character
Medium-Low	Landscape characteristics or features which are reasonably tolerant of change without detriment to their present character No designation present or of little local value .An example of an un-stimulating landscape or set of features
Low	Landscape characteristics or features which are tolerant of change without detriment to their present character No designation present or of low local value. An example of monotonous unattractive visually conflicting or degraded landscape or set of features

Table 9.2 Visual Sensitivity Criteria

Class	**Criteria**
High	Users of outdoor recreational facilities, on recognised national cycling or walking routes or in national designated landscapes Dwellings with views orientated towards the proposed development
High-Medium	Users of outdoor recreational facilities, in locally designated landscapes or on local recreational routes that are well publicised in guide books Road and rail users in nationally designated landscapes or on recognised scenic routes, likely to be travelling to enjoy the view
Medium	Users of primary transport road network, orientated towards the Development, likely to be travelling for other purposes than just the view. Dwellings with oblique views of the proposed development.
Medium-Low	People engaged in active outdoor sports or recreation and less likely to focus on the view.

	Primary transport road network and rail users likely to be travelling to work with oblique views of the Development or users of minor road network.
Low	People engaged in work activities indoors, with limited opportunity for views of the Development. Road users on minor access roads travelling for other purposes than just the view.

Table 9.3 Landscape Magnitude Criteria	
Class	**Criteria**
Very High	Very extensive, highly noticeable change, affecting most key characteristics and dominating the experience of the landscape; and Introduction of highly incongruous development
High	Extensive, noticeable change, affecting many key characteristics and the experience of the landscape; and Introduction of many incongruous elements.
Medium	Noticeable change to a significant proportion of the landscape, affecting some key characteristics and the experience of the landscape; and Introduction of some uncharacteristic elements.
Low	Minor change, affecting some characteristics and the experience of the landscape to an extent; and Introduction of elements that are not uncharacteristic.
Very Low	Little perceptible change.

Table 9.4 Visual Magnitude Criteria	
Class	**Criteria**
Very High	The development would dominate the existing view
High	The development would cause a considerable change to the existing view over a wide area or an intensive change over a limited area.
Medium	The development would cause moderate changes to the existing view over a wide area or noticeable change over a limited area.
Low	The development would cause minor changes to the existing view over a wide area or moderate changes over a limited area.
Very Low	No real change to perception of the view. Weak, not legible, hardly discernible

Table 9.5 Categories of Landscape and Visual Significance of Effect		
Degree of significance	**Description of Landscape Effect**	**Description of Visual Effect**
Major	Substantial alteration to elements/features of the baseline (pre-development) conditions. Notably affect an area of recognised national landscape quality.	Major/substantial alteration to elements/features of the baseline (pre-development) conditions. Where the proposed development would cause a very noticeable alteration in the existing view.

	Substantial alteration to the character, scale or pattern of the landscape.	This would typically occur where the proposed development closes an existing view of a landscape of regional or national importance and the proposed development would dominate the future view.
Major-Moderate	This category is a combination of descriptions of Major listed above and Moderate below. These combinations are discussed within the assessment of each landscape or visual receptor when they occur.	
Moderate	Alteration to elements/features of the baseline conditions. Affects an area of recognised regional landscape quality. Alteration to the character, scale or pattern of the local landscape.	Alteration to one or more elements/features of the baseline conditions such that post development character/attributes of the baseline will be materially changed. This would typically occur where the proposed development closes an existing view of a local landscape and the proposed development would be prominent in the future view.
Moderate-Minor	This category is a combination of descriptions of Moderate listed above and Minor below. These combinations are discussed within the assessment of each landscape or visual receptor when they occur.	
Minor	A minor shift away from baseline conditions. The Development partially changes the character of the site without compromising the overall existing landscape character area.	A minor shift away from baseline conditions. Occur where change arising from the alteration would be discernible but the underlying character / composition / attributes of the baseline condition will be similar to the pre-development. It would also occur where the proposed development newly appears in the view but not as a point of principal focus or where the proposed development is closely located to the viewpoint but seen at an acute angle and at the extremity of the overall view.
Negligible	No or very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable.	Where there is no discernible improvement or deterioration in the existing view.
No Effect	The Development would not affect the landscape receptor	The Development would not affect the view

Example Matrix (Professional judgement applied at every stage of assessment and matrix only used to check consistency.)		**Sensitivity**				
		High	**High - Medium**	**Medium**	**Medium - Low**	**Low**
Magnitude	**Very High**	Major	←→	Major	←→	Mod-major
	High	Major	←→	Mod-major	←→	Moderate
	Medium	Mod-major	←→	Moderate	←→	Minor
	Low	Moderate	←→	Minor	←→	Negligible
	Very Low	Minor	←→	Negligible	←→	Negligible

Intermediate sensitivity ratings (as per the criteria) would lead to a series of effects that lie between those stated above if a matrix was applied to the assessment. Professional judgement should be used to determine the degree of effect. e.g high-medium sensitivity combined with medium magnitude would equate to a Moderate+ effect and a decision needs to be made to determine if this effect is Moderate or Mod-Major. Intermediate magnitude ratings could also be arrived at during the assessment and a similar method should be applied here too.

Effects of above Moderate are considered Significant (Dark Grey)

Where intermediate effects are arrived at, particular care should be taken at the edges of the significance threshold i.e. between Mod and Mod-Maj (lighter grey) and these effects may require additional explanation as to why the decision was made to judge the effect as either significant or not significant.

Table 9.6 Example Matrix

The example matrix table above is used to summarise the findings from the criteria tables. By combining sensitively (along the top) with predicted magnitude of change (along the side), a predicted impact / effect is reached. This format is applicable to both landscape impacts and visual impacts.

In addition, to the impacts which sensitivity combined with the magnitude of change generate, there are a number of other factors which should be taken into account when preparing the landscape and visual assessment.

Development is often viewed as permanent and/or perceived to have a negative impact, it is therefore important to emphasise that change created by development can result in beneficial outcomes, and may also be temporary, short-term or indeed reversible.

This assessment also considers both the 'Type' and 'Duration' of the potential impacts. The following terminology has been used were appropriate:

Type of Visual Impacts

- Beneficial- A positive impact will improve or enhance the landscape character or viewpoint.
- Neutral- A neutral impact will neither enhance nor detract from the landscape character or viewpoint.
- Adverse- A negative impact will have an adverse effect on the existing landscape character or viewpoint.
-

Duration of Impacts

- Temporary- Impacts lasting one year or less
- Short–term- Impacts lasting one to seven years
- Medium-term- Impacts lasting seven to twenty years
- Long-term- Impacts lasting twenty to fifty years
- Permanent- Impacts lasting over fifty years.

9.1.3 Methodology

This Landscape & Visual Assessment was undertaken in the following stages:

• Desk Study (Stage 1)	1	Analysis of Baseline data, Map/Plans
	2	Consultation of Policy Documentation
	3	Zone of Visual Influence (Theoretical)
	4	Identification of Potential Visual Receptors
• Field Study	5	Confirmation of Visual Receptors
	6	Photo Survey from Visual Receptors
	7	Zone of Visual Influence (Actual/Field)
	8	Confirmation of Landscape Character
	9	Establish Landscape Sensitivity
• Desk Study (Stage2)	10	Analysis of Field Survey data
	11	Viewpoint Analysis
	12	Consider Mitigation &Restoration
• Desk Study (Stage3)	13	Report Preparation

9.2 Assessment of Baseline Conditions

This section establishes the landscape and visual context (or baseline) of the subject development. Typically for a proposed development this process involves consideration of the existing 'pre-development' condition of the receiving environment. However, for a SC scenario, the baseline will be a date which predates the introduction of any unauthorised development.

In relation to unauthorised development s177(F) legislation requires consideration of impacts that have occurred; impacts which are occurring; and impacts reasonably expected to occur.

9.2.1 'Impacts that have Occurred'

In relation to establishing a baseline for landscape and visual impacts 'having occurred', firstly it is important to emphasise that the majority of development currently visible at this site was authorised under a number of historic planning permissions, some of which date back to 1998. However, the primary focus in landscape and visual terms for this SC Application are landscape and visual impacts that have occurred since the building of Concrete Manufacturing facilities in 2013 and quarrying from when it became unauthorised in 2018 to present.

9.2.2 'Impacts Occurring'

This related to impacts arising from unauthorised development that are occurring at present.

9.2.3 'Impacts Reasonably Expected to Occur'

The final stage of the assessment is to consider the significant effects, or impacts, that can reasonably be expected to occur in the future- this will be 2 scenarios-

1. Planning permission is granted under Section 37L for quarrying operations and

2. Planning permission isn't granted and the site is closed.

Establishment of the baseline conditions involves a combination of both 'Desk and Field Study'

9.2.4 Desk Study

Desk studies generally involve analysis and interpretation of available print material relating to a sites context and the subject development within that context. It is a way of focusing the study prior to detailed site investigation.

Although general in nature the desk study stage of the project assists in the clarification of the following:

The general topography, vegetative cover, visible groundwater, and sites of potential historic or cultural interest.

Study of the available map information indicated that the site is located on a localised elevation in a gently undulating area.

OS 1:50000 mapping indicates that within 5km radius of the site there is a significant cover of coniferous forestry (approx. 2.5km to the West of the site) and several other blocks of deciduous woodland interspersed throughout the area.

Several historic/archaeological sites of note including Churches and Mounds have been highlighted within 5km around the application area.

Specific impacts on these elements should be separately assessed. However, their presence is noted within the landscape and visual section due to potential for them to be visitor attractions and therefore become key visual receptors.

Identification of primary investigation area or Zone of Theoretical Visual Influence (ZTVI);

Given the sites topography, it was expected that there would be open views to the site from positions to the North and South. However the openness and significance of these potential views cannot be confirmed in a desk study, detailed site investigation is required to establish actual Zone of Visual Influence.

Although ZTVI are calculated and generated using topographical data, it is generally accepted that such models do not necessarily reflect the actual visual catchment on the ground, it is therefore crucial that the topographically generated ZTVI is refined through detailed site survey and analysis - a series of ZTVI have been undertaken for this application which illustrate the potential extend of visibility (visual envelope) of the key development features including previously permitted and unauthorized for comparison.

The potential relationship between the development and any residential settlements, dwellings and the surrounding transportation network;

Although not all dwellings are individually identifiable on the OS 1:50000 map, it is sufficiently detailed for the desk study to reveal that the site is located in an area which has a relatively low population concentration.

Population is concentrated in the village of Rathmolyon and elsewhere as sporadic ribbon settlements primarily located along the surrounding minor roads.

Designations, protected areas and significant viewpoints;

The site does not lie within a landscape designation. Meath County Council undertook a landscape character assessment survey which is included within the County Development Plan 2021 – 2027 (Appendix 5), which divides the county into 'Landscape Character Areas' (LCA); the site is located on the boundary of the 'Central Lowlands' running to the South West and on the Western boundary of Rathmolyon Lowlands'. The site is located approximately 3km to the South West of the Boyne River Valley (LCA).

9.2.5 Field Study

Desk studies are important to establish the basic approach to landscape and visual assessment and for setting out principle issues/ areas to be investigated. However, it is only through field work that an accurate understanding of potential influence of a development can be fully determined.

Most importantly field study helps to clarify the eye level visual envelope of the development. This exercise refines the computer generated ZTVI models to more accurately reflect the actual visual envelope of the development.

The area has been visited on numerous occasions and specifically for the purpose of this report in September 2023 with foliage cover reasonably full. It should be noted that foliage cover decreases through Autumn and Winter resulting in increased visibility. The influence of

foliage cover has been factored into the findings, with a worst-case scenario considered – i.e vegetation cover at its lightest.

In addition to the information revealed during the desktop analysis, the field study work investigated and considered a number of critical issues, which have been factored into the assessment conclusions:

- Confirmation of the landscape character and sense of place, quality and value of the surrounding;
- Localised topography variation and woodland / hedgerow cover.
- Effects of localised planting, stone wall, earthworks and boundaries associated with residential properties;
- Relationship of other operations throughout in the area
- Consideration of operations in low light conditions
- Potential eye level perceptions (Local residents – Frequent, Passive Tourism - Occasional ;
- General landscape dynamic (assessing the potential pressures and evolution of surrounding landscape)

9.2.6 Landscape Character Baseline

As outlined above a broad landscape characterisation study of County Meath has been prepared and is contained within the County Meath Development Plan. The site sits on the border of two landscape characterisation areas within that study; the Central Lowlands, and the Rathmolyon Lowlands.

The relevant information has been studied and extracted from this document and is included overleaf.

LCA 6- Central Lowlands

Large lowland landscape with rolling drumlins interspersed with numerous large estates and associated parkland. Thick wooded hedgerows and some conifer plantations. Deep roadside ditches and banked hedgerows are a common feature. In more remote areas farmland is less well-managed with rough pasture, overgrown hedgerows and less woodland. Farmland is in a variety of scales and squares divided by hedgerows which are usually clipped to eye-level,

but less well-managed away from roads. The North East of the area deep and shallow well-drained soils have been developed for agriculture, with estate landscapes more prevalent.

Land Uses

Mix of small-medium rough pasture fields
Beech stands
Sand and gravel quarries

Boundary Determinants
Deep roadside ditches
Banked hedgerows
Eye-level clipped hedges

Landscape Value : Exceptional Very High **High** Moderate Low
Landscape Sensitivity: High **Medium** Low
Landscape Importance: Regional

9.2.7 Visual baseline

When establishing the extent of a development potential visibility there are a number of recognised stages:

- The first is generally conducted through desk study via utilisation of digital terrain models or printed mapping to generate Zone of Theoretical Visual Influence (ZTVI) analysis. This provides the assessor with a worst-case scenario of potential visibility, recognising that the exercise does not account for potential

screening influence of vegetation, manmade structures or indeed low level localised topographical variation.

- With ZTVI prepared, the next stage is to consider potential visual receptors. Again, this can initially be carried out as a desk study to identify potential properties, road intersections, historic sites or OS marked viewpoints etc which may be important to the assessment.
- The next stage generally is to test and refine desk study analysis in the field. Consideration of the surrounding landscape from a high point within or adjacent to the proposed development site is often a logical starting point for field work. From an elevated location, the assessor (comparing with ZTVI mapping) can identify points in the wider landscape from which the site is most likely to be visible. This exercise is known as intervisibility and forms the basis of defining the actual visual envelope. ZTVI models are shown on Figure 9.2
- The final stage is to consider visibility of the subject site from the surrounding landscape. This generally involves assessment and photography from fixed key locations as identified, along with sequential views experienced on pedestrian and vehicle routes.

However, the above is less relevant when considering extent of landscape and visual impact relating to unauthorized development (occurred / occurring) , simply because the actual extent of impact can be witnessed and considered directly.

Whilst field work involves consideration from all surrounding roads and pathways, it would be impossible (indeed unnecessary) to formally assess potential visibility from every possible angle or potential viewpoint. Therefore, the recognised practice is to identify and analyse a selection of viewpoints considered representative of a range of views and viewer types, including residences, transport routes, recreational routes, visitor attractions (including historic monuments), main landscape character types and a variety of distances, aspects, elevations, extents, and sequential routes. These are known as 'key visual receptors' and provide a reliable sample of potential impressions across the study area. Based on field survey and analysis, Figure 9.2 illustrate the identified ZTVI created by the development with Table 9.7 below listing, and Figure 9.3 illustrating, the location of key visual receptors identified for the study.

Viewpoint	Grid Reference	X	Y	Latitude	Longitude	Type
VP1	N 76003 50730	276003	250730	53.501289	-6.8552381	Regional Road - Sequential
VP2	N 76368 51482	276368	251482	53.507988	-6.8495505	Regional Road - Sequential
VP3	N 78216 51194	278216	251194	53.505137	-6.8217775	Local Road - Sequential
VP4	N 78344 51188	278344	251188	53.505061	-6.8198571	Local Road - Sequential
VP5	N 78923 50236	278923	250236	53.496423	-6.8113598	Local Road - Sequential
VP6	N 77417 48767	277417	248767	53.483443	-6.8344215	Local Road - Sequential
VP7	N 77289 48716	277289	248716	53.483012	-6.8363634	Local Road - Sequential

Table 9.7 – Key Visual Receptors

It should be noted as a basic visual principle, that any type of development in the landscape will become less perceptible with

distance. This simply equates to a reduction of the significance of potential visual impacts as one moves further away from the subject site.

Whilst there is no standard measure in relation to mineral workings in particular, the following descriptions provide a good guide of what may be experienced from distance categories.

Viewpoint Distance 0-2km

It is generally accepted that a development located approximately 2km or less from a viewer would be close enough to allow identification of some detail. Any positions within this range with open uninterrupted views of the development would generally expect to receive the greatest visual impacts.

Viewpoint Distance 2-5km

At this distance, visibility of a development site becomes more general, with viewers in open uninterrupted positions able to identify general form, colour/tone and textural contrast, but losing the more focused detail achievable from closer positions. Effects and impacts at this distance are generally less than those found between 0-2km.

Viewpoint Distance 5-15km+

Beyond 5km visual prominence quickly diminishes, although under certain circumstances such as light conditions or artificial lights have potential to allow aspects of developments and material finishes to be perceived. Beyond 15km distance the vast majority of development typologies are perceived as minor features within

the landscape and generally part of the general background/ distance views.

Figure 9.2 illustrates the identified ZTVI (Zone of Theoretical Visual Influence) created by the unauthorised elements of the operation. This can be contrasted with the ZTVIs for the large overburden stockpile, concrete silo and shed, all of which have had planning approval.

Figures 9.4 to 9.10 illustrate the key visual receptors identified for the study. The visibility assessment in this case has concentrated on publicly accessible areas primarily within the first distance category (0-2km).

The undulating topography, frequency and density of hedgerows combined with clusters of woodland vegetation greatly reduce the potential extent of visibility, however, there remain several stretches of minor public road from which portions of the unauthorised elements can be witnessed.

As illustrated in Figure 9.2 the Zone of Theoretical Visual Influence is relatively compact, focused largely within a 2km radius and primarily to lands and local roads to the North.

Views from local roads L80141 & L80140 present most opportunity to encounter views of the unauthorised elements of the development (i.e Pre-cast concrete manufacturing structures).

9.3 Assessment of Impacts - (Description of Unauthorised Development)

Whilst the application area for the SC covers the entire operation at Tromman, there are particular unauthorised elements which form the primary focus of this assessment.

The unauthorised elements are almost entirely focused in the Northern portion of the applicant lands, consist of the following physical structures :-

1 Unauthorised construction of an electrical substation;
2 Erection of a batching plant;
3 Limestone Powder Plants and associated structures & concrete silo;
4 Storage bays / industrial unit;
5 Localised sub surface lateral extractions.

9.3.1 Summary of Landscape Impacts

Landscape Assessment attempts to measure the sensitivity of specific landscape resources and describe the significance of changes to that landscape that may occur as a result of the development. They also more importantly identify opportunities during the design process that may minimise potential landscape and visual impacts through positive intervention. This can include exerting influence on the development layout and arrangement, or determining the most sympathetic operational approach to a proposal, i.e. suggested phasing, direction

and sequence of extraction. These are referred to a 'primary mitigation measures.

However, in relation to development which has already taken place (unauthorised), some primary mitigation measures are not possible. In this scenario mitigation opportunities are limited to 'secondary measures' designed to address residual negative effects of the final development proposals. This can include for example new / additional targeted screen planting.

Landscape and visual impacts are intrinsically linked; therefore, measures to reduce landscape impacts will generally assist with reduction of visual impacts and vice versa.

It is understood that this development will be decommissioned at the end of its requirement, which is directly linked to the associated quarry operations at the site and returned to agricultural and or biodiversity use.

Consideration Factor Type Significance	**Comment**	**Significance**
Landscape designation	Not within Landscape designated area, or Area of Constraint on Mineral Development.	Whilst this is a pleasant landscape of local value, it is not considered of national or international importance
Landscape scale	Varies from large scale to relatively intimate.	Attractive rural landscape
Landscape quality	There are valuable qualities to this landscape which should be enhanced and replicated at restoration stage.	Rich and interesting but not considered rare or threatened.
Visual Receptors	The majority of views are from a small number of roads adjacent to the site.	Views from the surrounding minor roads are not classed as significant.

Table 9.8 Landscape Sensitivity Summary (within visual envelope)

The Landscape Character Assessment as outlined, broadly describes and classifies the landscape of the county, providing a valuable tool to aid decision making by planners and other interested parties.

However, it is generally accepted that large scale, characterisation of this type presents some limitations. Within each identified character area there can be localised variability of landscape conditions which cannot be identified at a large scale. For example, it would not be unusual to find pockets of very high or very low landscape value within a landscape character area generally classified as having an overall landscape value of medium.

In this instance the landscape character and value of the lands surrounding the subject site have been directly influenced by the presence of quarry operations for several decades. Therefore, whilst the general landscape character of the region is classified as high value, it is considered that a value of moderate to low is appropriate to describe the localised / site level character .

Weighting up the various complex factors as outlined in the Criteria Tables provided at Section 9.1.2 of this REIAR, and in particular the application sites location outwith any recognised landscape designation area, combined with natural screening, low numbers of impacted population, and potential for additional mitigation it is concluded that the landscape sensitivity of the area should be generally classed as **Medium-Low** as defined below.

Medium-Low- Landscape characteristics or features which are reasonably tolerant of change without determent to their present character. No designation present or of little local value. An example of an un-stimulating landscape or set of features. (Extract from Table 9.1 Landscape Sensitivity Criteria)

Landscape sensitivity is combined with the magnitude of change generated by a development to establish the overall impact / effect. In addition to the Criteria Tables above, magnitude of change will be influence by the following:

- Potential for mitigation.
- Development typology

- Duration of development
- Existing precedence of quarrying / processing operations in the area.
- Form of buildings and structures – i.e Do they appear as agricultural structures familiar to the region.
- The population numbers impacted are considered low.
- Full decommissioning and restoration proposed.

9.3.2 Assessment of landscape impacts which have occurred

With reference to Table 9.3 Landscape Magnitude Criteria it is considered that the unauthorised elements of the development which have occurred between 2013 and present fall within the **Low** category as defined below:-

Low- Minor change, affecting some characteristics and the experience of the landscape to an extent; and Introduction of elements that are not uncharacteristic.

Table 9.9 Assessment of landscape impacts which have occurred

		Sensitivity				
		High	**High - Medium**	**Medium**	**Medium - Low**	**Low**
Magnitude	**Very High**	Major	←→	Major	←→	Mod-major
	High	Major	←→	Mod-major	←→	Moderate
	Medium	Mod-major	←→	Moderate	←→	Minor
	Low	Moderate	←→	**Minor**	←→	Negligible

	Very Low	Minor	⟷	Negligible	⟷	Negligible

When combining **Medium / Low** landscape sensitivity with a **Low** magnitude of change, landscape impacts which have occurred between 2013 and present generated by unauthorised development are considered **Minor.**

With reference to Table 9.3 Landscape Magnitude Criteria it is considered that the unauthorised elements of the development would fall within the **Low** category as defined below:-

Low- Minor change, affecting some characteristics and the experience of the landscape to an extent; and Introduction of elements that are not uncharacteristic.

9.3.3 Assessment of landscape impacts which are occurring

With reference to Table 9.3 Landscape Magnitude Criteria it is considered that the unauthorised elements of the development which are occurring at this site at present fall within the **Low** category as defined below:-

Low- Minor change, affecting some characteristics and the experience of the landscape to an extent;
and Introduction of elements that are not uncharacteristic.

Table 9.10 Assessment of landscape impacts which are Occurring

	Sensitivity

		High	High - Medium	Medium	Medium - Low	Low
Magnitude	Very High	Major	←→	Major	←→	Mod-major
	High	Major	←→	Mod-major	←→	Moderate
	Medium	Mod-major	←→	Moderate	←→	Minor
	Low	Moderate	←→	Minor	←→	Negligible
	Very Low	Minor	←→	Negligible	←→	Negligible

When combining **Medium / Low** landscape sensitivity with a **Low** magnitude of change, the landscape impacts which are occurring at present generated by unauthorised elements of this development are considered **Minor.**

9.3.4 Assessment of landscape impacts which are expected to occur (2 Scenarios)

1. Planning permission granted under Section 37L for further quarrying operations

		Sensitivity				
		High	High - Medium	Medium	Medium - Low	Low
Magnitude	Very High	Major	←→	Major	←→	Mod-major
	High	Major	←→	Mod-major	←→	Moderate
	Medium	Mod-major	←→	Moderate	←→	Minor
	Low	Moderate	←→	Minor	←→	Negligible
	Very Low	Minor	←→	Negligible	←→	Negligible

Table 9.11 Assessment of landscape impacts expected to occur – with continuance of operations granted. (Operational Stage)

In scenario 1 (continuation of quarrying operations), with landscape sensitivity of **Medium/ Low** and magnitude of change considered **Very Low**, it is predicted that impact to the landscape character area would be **Negligible (Neutral)**. Further details are provided in the EIAR submitted as part of the linked S37L Application.

2. Planning permission for continuation refused resulting in closure.

		Sensitivity				
		High	**High - Medium**	**Medium**	**Medium - Low**	**Low**
Magnitude	**Very High**	Major	←→	Major	←→	Mod-major
	High	Major	←→	Mod-major	←→	Moderate
	Medium	Mod-major	←→	Moderate	←→	Minor
	Low	Moderate	←→	**Minor**	←→	Negligible
	Very Low	Minor	←→	Negligible	←→	Negligible

Table 9.12 Assessment of landscape impacts expected to occur – with continuance of operations refused.

In scenario 2 (continuation of quarrying operations refused and site closed) with landscape sensitivity of **Medium/ Low** and magnitude of change considered **Low**, it is predicted that impact to the landscape character area would be **Minor (Neutral)**.

9.3.5 Summary of Visual Impacts

Visual impacts are illustrated by assessment from specific representative viewpoints. Figures 9.4-9.10 held at Appendix 9.1 illustrate key identified visual receptors, with potential visual impacts assessed from these positions.

Tables 9.13 to 9.16 below provide a summary of the Visual Impacts from each of the selected viewpoints.

Viewpoint No.	Receptor Type	Visual Sensitivity	Magnitude of Change	Effect /Impact
Viewpoint 1	Public Road - Sequential	Medium-Low	Very low	Negligible
Viewpoint 2	Public Road - Sequential	Medium-Low	Very low	Negligible
Viewpoint 3	Public Road - Sequential	Low	Medium	Minor
Viewpoint 4	Public Road - Sequential	Low	Medium	Minor
Viewpoint 5	Public Road - Sequential	Low	Medium	Minor
Viewpoint 6	Public Road - Sequential	Medium	Low	Minor
Viewpoint 7	Public Road - Sequential	Medium	Low	Minor

Table 9.13 Summary of Visual impacts (Occurred 2013 - Present)

Viewpoint No.	Receptor Type	Visual Sensitivity	Magnitude of Change	Effect /Impact
Viewpoint 1	Public Road - Sequential	Medium-Low	Very low	Negligible
Viewpoint 2	Public Road - Sequential	Medium-Low	Very low	Negligible
Viewpoint 3	Public Road - Sequential	Low	Medium	Minor
Viewpoint 4	Public Road - Sequential	Low	Medium	Minor
Viewpoint 5	Public Road - Sequential	Low	Medium	Minor
Viewpoint 6	Public Road - Sequential	Medium	Low	Minor
Viewpoint 7	Public Road - Sequential	Medium	Low	Minor

Table 9.14 Summary of Visual impacts (Occurring)

Visual effects which have occurred from the unauthorized elements of the development at the selected visual receptors range from **Negligible** to **Minor.**

Visual effects which are occurring from the unauthorized elements of the development at the selected visual receptors range from **Negligible** to **Minor.**

Viewpoint No.	Receptor Type	Visual Sensitivity	Magnitude of Change	Effect /Impact
Viewpoint 1	Public Road - Sequential	Medium-Low	Very Low	Negligible
Viewpoint 2	Public Road - Sequential	Medium-Low	Very Low	Negligible
Viewpoint 3	Public Road - Sequential	Low	Very Low	Negligible
Viewpoint 4	Public Road - Sequential	Low	Very Low	Negligible
Viewpoint 5	Public Road - Sequential	Low	Very Low	Negligible
Viewpoint 6	Public Road - Sequential	Medium	Very Low	Negligible
Viewpoint 7	Public Road - Sequential	Medium	Very Low	Negligible

Table 9.15 Summary of Visual Impacts Scenario 1 (Impacts reasonably expected to occur should permission be granted)

Viewpoint No.	Receptor Type	Visual Sensitivity	Magnitude of Change	Effect /Impact
Viewpoint 1	Public Road - Sequential	Medium-Low	Very Low	Negligible
Viewpoint 2	Public Road - Sequential	Medium-Low	Very Low	Negligible
Viewpoint 3	Public Road - Sequential	Low	Very Low	Negligible
Viewpoint 4	Public Road - Sequential	Low	Very Low	Negligible
Viewpoint 5	Public Road - Sequential	Low	Very Low	Negligible
Viewpoint 6	Public Road - Sequential	Medium	Very Low	Negligible
Viewpoint 7	Public Road - Sequential	Medium-Low	Very Low	Negligible

Table 9.16 Summary of Visual Impacts Scenario 2 (Impacts reasonably expected to occur should permission be refused)

Visual effects which are reasonably expected to occur from Scenario 1 (should permission for continuation of quarrying operations be granted) at the selected visual receptors would be neutral and **Negligible.**

Visual effects which are reasonably expected to occur from Scenario 2 (should permission for continuation of quarrying operations be refused) at the selected visual receptors would be neutral and **Negligible.**

As viewers move away from these locations, visual sensitivity and magnitude of change will further diminish.

9.4 Mitigating Landscape and Visual Impacts

In the case of a SC application for unauthorised development there are two future scenarios which could be considered:

- Scenario 1 Continuation of quarrying operations with mitigation (subject to s37L approval)
- Scenario 2 Cessation of operations and closure.

Mitigation measures are generally considered under two categories:

- primary measures that intrinsically comprise part of the development design through an iterative process;
- secondary measures designed to specifically address the remaining (residual) negative(adverse) effects of the final development proposals' (Guidelines for Landscape and Visual Impact Assessment)

In the case of a SC application for unauthorised development, 'primary measures' and the opportunity to mitigate impacts may have passed, therefore with the development already in place, reliance is then

placed on opportunities to mitigate residual impacts through 'secondary measures' such as targeted screen planting; lighting design to minimize potential light spillage; the colour/ finish of vertical structures etc.

The primary focus of this assessment is the unauthorized batching plant structures to the north of the subject site. Although it is considered that these relatively large structures sit well into the landscape, assisted by the selection of dark green cladding, there is potential to consider further mitigation measures including:

- Augmenting existing boundary planting with additional planting.
- Reduction and eventual removal of adjacent large existing overburden tip which breaks the skyline and draws additional attention and focus to the operation.
- Consideration of stratified coloration of the taller structured such as the concrete silo. For example Dark greens / blues / browns in the lower portion of structures with gradation to the existing lighter colours in the upper portions.
- Review of all lighting within the plant to minimise external light spill.
- Restoration to commence at the earliest opportunity in all areas where extraction or operations associated with extraction are no longer occurring.

9.5 Residual Impacts

Topographically, the subject site is largely obscured from many locations. As described in section 9.2.4, the areas which are likely to be exposed to the greatest residual visual impact are from localised stretches a minor roads to the north.

The majority of the remaining potential views occurring along the surrounding road network are generally insignificant and where achievable, normally only visible at angles to the vehicles forward field of vision (oblique angles). This factor combined with the speed of moving vehicles, distance, fragmentation of views caused by hedgerows, trees, buildings, and local topographical variation etc. reduces the site's overall visual impact.

Whilst some additional mitigation measures could be explored and introduced as outlined in section 9.7.1 above, the overall impacts are considered minor.

9.6 Conclusions

The following conclusions have been made based on the above investigation:

- Unauthorised development associated with the production of pre-cast concrete and other ancillary elements associated with an existing quarry and processing operation.
- The site lies outwith any identified landscape designation area.

- The site is located in the South East of landscape character 'Central Lowlands' and on the boundary of 'Rathmolyon Lowlands' Co. Meath Development Plan 2021-2027.
- The site is on the northern side of a local hill in the area of Tromman.
- The field boundaries surrounding are reasonably mature.
- The visual catchment of the site is considered relatively small. Focused primarily to the North.
- Population is considered low in the region, with low numbers located within the proposed visual envelope.
- The most open views of the site are limited to areas within close proximity. This will impact a very low number of properties and public roads. Distance views are restricted by the presence of mature trees in hedgerows and copses which are common to the area.
- The unauthorised plant and all vertical structures would be decommissioned as they are not permanent, but directly associated with the extraction activity on the site. Under restoration, the lands would be returned to agricultural and biodiversity use.
- Within the Meath Development plan this Character Area is described as having **Medium** Landscape Sensitivity and **High** Landscape Value.
- However on a localised level the Landscape sensitivity is considered to be **Medium- Low**
- Magnitude of change to the landscape from the unauthorised development is considered **Low**.
- Overall landscape impact/effect which have occurred (2013 to present) are collectively considered **Minor.**
- Overall landscape impact/effect which are occurring (Present) are collectively considered **Minor.**
- Magnitude of change to the landscape from the future development is considered Low.

- In Scenario 1 - (Impacts reasonably expected to occur should permission be granted) a landscape impact at Operational Stage of **Negligible (Neutral)** would result.
- In Scenario 2 – (Impacts reasonably expected to occur should permission be refused and site closure) a landscape impact of **Minor (Neutral)** would result.
- Visual sensitivity ranges from is considered **Medium** to **Low**
- Magnitude of change incorporating mitigation from specific key visual receptors are illustrated in Figures 9.4 to 9.10 are collectively considered **Medium** to **Very Low**
- Overall the visual impacts/significance which have occurred (2013 to present) are collectively considered **Negligible** to **Minor**.
- Overall the visual impacts/significance which are occurring (present) are collectively considered **Negligible** to **Minor**.
- In Scenario 1 - (Impacts reasonably expected to occur should permission be granted) the visual impact at the Operational Stage is expected to be **Negligible (Neutral).**
- In Scenario 2 – (Impacts reasonably expected to occur should permission be refused and site restored/ remediated) is expected to be **Minor (Neutral).**

10.0 AIR QUALITY & CLIMATE

10.1 Introduction

This remedial Air Quality & Climate Impact Assessment has been prepared to accompany an application for SC (the Application) at Keegan Quarries Ltd., Tromman, Rathmolyon, Co. Meath and forms part of the rEIAR.

The Air Quality & Climate Impact Assessment has considered the totality of the operational site to include the existing quarrying operations previously permitted under and extended to the 5th August 2018.

This Air Quality & Climate Impact Assessment report has been prepared by Mervyn Keegan. Mervyn Keegan is a Director of the environmental consultancy, AONA Environmental Consulting Ltd. Mervyn Keegan's credentials are outlined in Section 7 and therefore are not repeated here.

The Air Quality Impact Assessment has addressed the associated structures that Meath County Council consider to be unauthorised and the existing extraction operations that post-date the extended appropriate period for the quarrying operations.

10.2 Methodology

10.2.1 Relevant Guidelines & Standards

The Quarries and Ancillary Activities, Guidelines for Planning Authorities states that following with regard to the control of dust;

"There are currently no Irish statutory standards or EPA guidelines relating specifically to dust deposition thresholds for inert mineral/aggregate dust. (See, however, the Air Quality Standards Regulations 2002 for measurement standards). There are a number of methods to measure dust deposition (such as the Frisbee method) but only the German TA Luft Air Quality Standard relates a specific method (i.e. Bergerhoff) of measuring dust deposition with dust nuisance. On this basis it is recommended that the following TA Luft dust deposition limit value be adopted at site boundaries near quarry developments:
Total dust deposition (soluble and insoluble): 350 milligram per square metre per day (when averaged over a 30-day period).

Best practice dust control measures should be proposed by the applicant".

On the basis of the above, the following limits apply to the operation of the quarry and associated manufacturing activities;

Total dust deposition (soluble and insoluble): 350 mg/m^2/day (when averaged over a 30-day period).

Planning Condition 15 of the Planning Permission Ref. TA/900976 requires the operator to monitor and record dust deposition levels. No dust deposition limits are specified.

10.2.2 Dust Deposition Impact Assessment

In quarries, dust typically becomes airborne due to the action of wind on material stockpiles and other dusty surfaces, or when thrown up by mechanical action, for example the movement of tyres on a dusty road or activities such as blasting, drilling, screening, etc. There are many types of particulate matter (PM) that are included in the definition of dust, including variations in terms of size and chemical composition.

A basic classification of particles may be made into those that are easily deposited and those that remain suspended in the air for long periods. This division is useful as deposited dust is usually the coarse fraction of particulates that causes dust annoyance, whereas suspended particulate matter is implicated more in exposure impacts.

Airborne particles have a large range of diameters, from nano-particles and ultrafine particles (diameters less than 0.1µm) to the very large particles with diameters up towards 100µm. There is no clear dividing line between the sizes of suspended particulates and deposited particulates, although particles with diameters >50 µm tend to be deposited quickly and particles of diameter <10 µm have an extremely low deposition rate in comparison. Therefore, the size of suspended and deposited dust particles affects their distribution and as such requires two very different approaches to sampling these fractions.

Large particles (100µm diameter) are likely to settle within 5-10m of their source under a typical mean wind speed of 4-5 m/s, and particles between 30-100 µm diameter are likely to settle within 100m of the source. Smaller particles, particularly those <10 µm in diameter, have a greater potential to have their settling rate impeded by atmospheric turbulence and to be transported further from their source. Dust emissions are exacerbated by dry weather and high wind speeds. Therefore, the dust deposition impact depends on the wind direction and the relative location of the dust source and receptor.

PM_{10} is the fraction of airborne (suspended) PM which contains particles of diameter less than 10µm. PM_{10} includes all particles, of different sizes and types, which are relevant for potential health effects. PM_{10} can penetrate deep into the respiratory system increasing the risk of respiratory and cardiovascular disorders.

Dust emissions can arise as a result of operational activities, and /or wind erosion of exposed surfaces. The amount of dust that is raised is highly dependent upon a number of interrelated factors, which include:

- The nature of the material;
- The prevailing meteorological conditions;
- The activities being undertaken;
- The influence of any on site mitigation measures.

The British Research Establishment (BRE) has previously published guidelines for ambient background dust deposition rates in different types of districts as follows;

Type of District	**Dust Deposition Rate (mg/m^2/day)**
Major city centre, heavy industrial area	1,040
Highly developed large urban area	520
Urban area of limited size with parkland or largely rural surroundings	260
Partially developed area	180
Rural area with little development	130

Table 10.1: British Research Establishment guidelines for ambient background dust deposition rates in different types of districts.

The immediate area around the Tromman Quarry site can be categorised as a "rural area with little development"/ "partially developed area". Therefore, it is considered that it is reasonable to assume that the background dust deposition rates for such areas range are up to approximately 130 mg/m^2/day.

The prevailing meteorological conditions are the most significant issue which will affect the rate of dust deposition outside of the boundary of a quarry and its associated activities. Therefore, it can be assumed that during the drier months of the year, there is the potential for dust deposition rates to be higher than the annual average dust deposition rate. In order to establish an accurate existing baseline dust deposition level in the area, a 12 month dust deposition survey typically needs to be carried out. Also, as the existing quarry has been in operation in the area for in excess of 20 years, the existing baseline dust deposition level may be elevated above the normal rural levels. Tromman Quarry has

been undertaking continuous dust deposition monitoring in accordance with the requirements of previous planning consents.

10.2.3 Dust Deposition Monitoring Methodology

The dust deposition monitoring locations in proximity to the Tromman Quarry have been determined after consideration of the requirements of German Standard Method VDI 2119 – '*Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method) German Institute)*'. Gauges were installed in consideration of requirements relating to location of the gauges relative to buildings and other obstructions, height above ground and sample collection and analysis procedures. Dust deposition monitoring is continuously undertaken using Bergerhoff glass deposition gauges at four monitoring locations at the entrance. Figure 10.1 illustrates the dust deposition monitoring locations.

Figure 10.1: Dust deposition monitoring locations (DDML).

The dust deposition monitoring surveys have been undertaken by Byrne Environmental since 2013 in accordance with the procedure in Standard Method VDI 2119 – '*Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method) German Institute'*. The dust deposition monitoring surveys comprise of positioning of four Bergerhoff Dust Deposit Gauges at the locations described for a period of 30 (+- 2) days. After the exposure period is complete, the gauges are removed from the site and transported to an accredited laboratory under a strict chain of custody for analysis. The samples are evaporated

down and the dry residue, and the total dust content determined gravimetrically and the result reported in mg/sample. Results are expressed as a dust deposition rate in mg/m^2/day in accordance with the relevant standard.

10.3 Air Quality & Dust Impacts that have occurred

This assessment of the air quality & dust impact that have occurred has been undertaken as follows:

- Reference to historical quarterly dust deposition surveys at four boundary locations, to establish the current dust deposition rates in the area.
- A comparison of the measured quarterly dust deposition rates at four boundary locations against relevant guidelines

10.3.1 Baseline Air Quality Data

The background air quality in the area of the development is recognised to be of very good quality and the site is located in the 'Zone D' area, as denoted by the EPA. The EPA has divided the country into zones for the assessment and management of air quality. The zones adopted in Ireland are Zone A, the Dublin conurbation; Zone B, the Cork conurbation; Zone C, comprising 21 large towns in Ireland with a population >15,000; and Zone D, the remaining area of Ireland. Concentrations of air quality pollutants in Zone D are very low and well below the relevant air quality limit values.

There are no other significant air pollutant sources in the area other than the Keegan Quarries Ltd. Tromman Quarry and the Kilsaran Quarries, also referred to as Tromman Quarry directly adjacent to the target site. Background air quality is most likely to be typical rural areas influenced by existing local traffic and agricultural activities, etc.

The Environmental Protection Agency's Air Quality Index for Health (AQIH) provides a scaled number from one to ten that identifies the current air quality currently in a region and whether or not this might affect human health. A reading of ten means the air quality is very poor and a reading of one to three inclusive means that the air quality is good. The AQIH indicates that the area surrounding the Tromman Quarry site is in an area of good air quality.

Rural East	Towns with population less than 5,000, villages and rural areas in Counties Carlow, Cavan, Dublin, Kildare, Kilkenny, Laois, Longford, Louth, Meath, Monaghan, Offaly, Tipperary, Waterford, Westmeath, Wexford and Wicklow.	Corresponds to part of Zone D

Based on the Environmental Protection Agency's Air Quality in Ireland Report 2016, the following background concentrations are likely in the area;

- Nitrogen dioxide (NO_2) – Zone D Average ~ 10 µg/m^3 – Limit Value 40 µg/m^3
- Sulphur dioxide (SO_2) – Zone D Average <5 µg/m^3 – Limit Value 20 µg/m^3 (for the protection of vegetation)

- Particulate Matter (PM_{10}) – Zone D Average ~ 15 µg/m^3 – Limit Value 40 µg/m^3
- Particulate Matter ($PM_{2.5}$) – Zone D Average ~ 8 µg/m^3 – Limit Value 25 µg/m^3

10.3.2 Dust Deposition Monitoring Results

As a SC application and a rEIAR is required to inspect the impacts of the unauthorised development and cumulative impacts to include the quarry until the date of submission (Winter 23/24), it is considered that 2013 is an appropriate 'baseline year' as this is when the precast manufacturing structures in the northern part of the site and other ancillary developments were erected. Further to this initial baseline date, it is also necessary to consider the period from 4th August 2018, the time at which quarrying became unauthorised, to present. The 5th August 2018 therefore effectively comprises a date, following which the environmental impact of all the site activities which have occurred at the site (both pre-cast manufacturing/ancillary processes and quarrying) will need to be cumulatively considered.

The surrounding lands can be characterised as rural in nature with land uses in the area identified as agricultural, extractive and single house residential. Extractive operations and associated value added manufacturing activities are the primary, established land use in the locality, comprising of the subject site and the adjoining Kilsaran Quarry which borders the Tromman Quarry site to the west. As outlined in Table 10.2, since 1st Quarter 2013, there has been exceedances of the 350

mg/m^3/day limit value recorded at just three monitoring locations during the dust deposition surveys. The average dust deposition rate is well below the assessment limit for ambient dust impact of 350 mg/m^2/day. This dust deposition monitoring data includes the cumulative impact of the dust from the adjoining Kilsaran Quarry.

Period	Date	D1 (South)	D2 (East)	D3 (West)	D4 (North)
Qtr 1 2013	07/01/2013-07/02/2013	89	125	98	<45
Qtr 2 2013	03/06/2013-03/07/2013	88	64	172	49
Qtr 3 2013	02/09/2013-03/10/2019	<88	98	98	98
Qtr 4 2013	05/11/2013-03/12/2013	89	110	116	179
Qtr 1 2014	03/02/2014-03/03/2014	<53	<53	<53	<53
Qtr 2 2014	21/04/2014-21/05/2014	49	74	108	54
Qtr 3 2014	02/09/2014-02/10/2014	<49	<49	<49	<49
Qtr 4 2014	05/11/2014-04/12/2014	63	95	<51	52
Qtr 1 2015	17/01/2015-17/02/2015	<53	<53	<53	<53
Qtr 2 2015	18/05/2015-18/06/2015	<49	59	<49	137
Qtr 3 2015	01/09/2015-30/09/2015	<49	93	79	54
Qtr 4 2015	30/09/2015-30/10/2015	<49	<49	<49	<49
Qtr 1 2016	01/03/2016-01/04/2016	<48	<48	<48	<48
Qtr 2 2016	01/06/2016-30/06/2016	123	79	<49	<49
Qtr 3 2016	30/06/2016-26/07/2016	<57	<57	<57	<57
Qtr 4 2016	03/10/2016-03/11/2016	<48	<48	<48	<48
Qtr 1 2017	01/03/2017-30/03/2017	<51	<51	<51	<51
Qtr 2 2017	02/05/2017-03/06/2017	<46	<46	<46	<46
Qtr 3 2017	02/08/2017-1/09/2017	<49	<49	<49	<49
Qtr 4 2017	01/10/2017/-01/11/2017	<48	<48	<48	<48
Qtr 1 2018	04/01/2018-04/02/2018	<48	<48	152	124
Qtr 2 2018	04/05/2018-05/06/2018	<46	<46	<46	<46
Qtr 3 2018	02/07/2018-02/08/2018	48	62	214	76

Qtr 4 2018	01/10/2018-01/11/2018	<48	<48	<48	119
Qtr 1 2019	04/02/2019-04/03/2019	121	53	53	<53
Qtr 2 2019	01/06/2019-01/07/2019	157	137	<49	<64
Qtr 3 2019	03/09/2019-02/10/2019	63	76	624(Note)	65
Qtr 4 2019	01/11/2019-02/12/2019	101	74	37	60
Qtr 1 2020	01/03/2020-31/03/2020	260	157	118	na
Qtr 2 2020	01/05/2020-31/5/2020	45	96	282	32
Qtr 3 2020	01/07/2020-31/07/2020	66	91	165	51
Qtr 4 2020	01/10/2020-31/10/2020	260	108	74	172
Qtr 1 2021	01/01/2021-31/01/2021	16	104	93	<11
Qtr 2 2021	01/05/2021-31/05/2021	93	167	59	118
Qtr 3 2021	01/08/2021-31/08/2021	63	16	84	299
Qtr 4 2021	01/10/2021-31/10/2021	109	123	128	78
Qtr 1 2022	01/02/2022-31/02/2022	314	71	24	171
Qtr 2 2022	01/05/2022-31/05/2022	128	67	242	200
Qtr 3 2022	01/09/2022-31/09/2022	77	49	661	95
Qtr 4 2022	01/10/2022-31/10/2022	356	259	334	117
Qtr 1 2023	01/02/2023-31/02/2023	181	329	208	203
Qtr 2 2023	01/05/2023-31/05/2023	143	107	97	147
Qtr 3 2023	01/07/2023-31/07/2023	328	290	297	198
Limit Value		**350 mg/m²/day**			

Table 10.2: Quarterly Dust Deposition monitoring survey results since 1st Quarter 2013 until the 3rd Quarter of 2023

10.4 Air Quality & Dust Impacts that are occurring

10.4.1 Concrete Manufacturing Impacts that are occurring

The results of the quarterly dust deposition surveys incorporate dust deposition impacts from the associated manufacturing installations that Meath County Council consider to be unauthorised. The results of the

quarterly dust deposition surveys, primarily at DDML 4 assess the dust deposition impact from the northern area of the Tromman Quarry site, including the cumulative impact from the adjoining Kilsaran Quarry.

This allows for the assessment of the present site layout with the erection of the pre-cast manufacturing unit on the eastern side of the concrete yard and the internal arrangement of the concrete block making yard and storage, reverting to its existing central location. The dust deposition rate results are well in accordance with the limit value of 350 mg/m^2/day as recorded at this location in the last 10 years, to include impacts that are occurring, as demonstrated via the deposition results presented for quarters 1 to 3 of 2023.

10.4.2 Quarrying Impacts that are occurring

The results of the quarterly dust deposition surveys address the existing extraction operations that post-date the extended appropriate period for the quarrying operations that Meath County Council consider to be unauthorised. The results of the quarterly dust deposition surveys, primarily at DDML 1, 2 and 3, including the cumulative impact from the adjoining Kilsaran Quarry, assess the dust deposition impact from the quarry area of the Tromman Quarry site. The dust deposition rate results are well in accordance with the limit value of 350 mg/m^2/day as recorded at these locations in the last 10 years to include impacts that are occurring, as demonstrated via the deposition results presented for quarters 1 to 3 of 2023.

10.4.3 Cumulative Impacts that are occurring

The results of the quarterly dust deposition surveys at DDML 1, 2, 3 and 4, including the cumulative impact from the adjoining Kilsaran Quarry, address the quarry extraction operations that post-date the extended appropriate period for the quarrying operations that Meath County Council consider to be unauthorised and the associated industrial structures and operations in the northern area of the site. The dust deposition rate results are well in accordance with the limit value of 350 mg/m2/day as recorded at these locations in the last 10 years to include impacts that are occurring, as demonstrated via the deposition results presented for quarters 1 to 3 of 2023.

10.5 Air Quality & Dust Impacts that can reasonably be expected to occur

The final stage of the assessment is to consider the significant effects, or impacts, that can reasonably be expected to occur as a result of the development for which SC is required in providing restoration of and post restoration of the site, considering both the prospect of immediate remediation, or the alternative of continued operations under separate consent under s.37L of the Act, following consideration by the Competent Authority. It is understood that continued operational development whilst not part of the SC application, is an outcome that could also be "reasonably expected to occur" and warrants consideration in line with legislative direction. It is envisaged that the potential for continuation of use of the site, in line with the environmental parameters previously assessed, would continue to be environmentally acceptable. It is not intended to duplicate the s.37L application and it is associated EIAR in this document, but outline consideration will be provided on this basis to cover all reasonable expectations.

It is reasonable to suggest that there would be no change anticipated from the continuation of the associated manufacturing operations on the site, i.e. existing dust deposition rates will remain the same. Any proposed extraction development is likely to result in similar dust deposition rates in proximity to the quarry site and if anything future dust deposition rates should be lower as development descends to lower depths allowing for increased attenuation by quarry faces. Specific assessment of the impacts associated with future working at the Site is

provided in the accompanying s.37L application. The Assessment concludes that the proposed development as set out in the accompanying EIAR would not result in any significant effects upon the environment by virtue of air quality. .

The cumulative dust deposition impacts from the associated structures in the northern area of the Tromman Quarry site and the existing extraction operations that post-date the extended appropriate period for the quarrying operations that Meath County Council consider to be unauthorised have been assessed. The dust deposition impacts do not result in an exceedance of the 350 mg/m^2/day limit at the Tromman Quarry boundary locations. There is no reason to suggest that with continued implementation of the dust mitigation measures employed at the site, that any exceedance of the 350 mg/m^2/day limit would be expected.

In terms of the alternative scenario which can be reasonably expected to occur, should existing quarrying and associated manufacturing operations on the site cease in line with SC requirements, dust deposition impacts from de-commissioning of the industrial structures in the northern area of the Tromman Quarry site and / or the regrading of the benches in the existing extraction area and subsequent infill with groundwater may result in short-term dust deposition impacts.

Such activities will include movement of overburden, internal bund construction, restorative planting works, de-commissioning of plant and equipment, etc. Typically, such works will be carried out during an 8 week window per annum to allow for increased noise limits to apply. It is considered that these short-term works can be implemented now in

accordance with the restoration concept plan for the site despite the unauthorised works and are not considered likely to result in any significant effects upon the environment.

10.6 On-going Dust Mitigation Measures

The following dust mitigation measures are employed to minimise operational impacts. The aim of these mitigation measures is to minimise the release of dust to the environment. Outlined in detail below are the dust suppression measures employed at the Tromman Quarry site.

10.6.1 Operating and Dust Mitigation Measures:

The site manager has overall responsibility for ensuring that operations within the Tromman Quarry site comply with the requirements of any planning authorisation. The site has at its disposal a suitable water bowser and associated water supply to allow for dampening down of the site when windblown dust from its surface arises. This is in very regular use on site. The occurrence of potential wind-blown dust is weather dependent but suitable facilities are available to minimise windblown dust from the site surfaces.

10.6.2 Access Roads, Site Roads and Vehicles Loading Activities & Movements:

The objective of these procedures is to minimise the creation and release of dust generated by transportation activities carried out during both access to and movements within the site. This includes minimising dust from transport vehicles entering and leaving the facility.

- Regular attention is paid to cleaning dust material from all roadways, hard surfaced areas and working areas of the facility. Dust from cleanup is re-incorporated into the stockpile. This is done during every lull in operations and at the end of each working period.
- Roadways and other areas where vehicles are regularly moving are kept clean, by sweeping or by wetting;
- When loading vehicles, the following procedures are adhered to:
    - No overloading of vehicles or containers resulting in either peaks of cargo or overspill onto the working areas or roadways.
    - Keep fall heights of the material into the transport vehicles to a minimum.
- Strictly applied, suitable on-site speed limits are set, displayed and observed for the movement of all vehicles (10 mph)
- A suitable underbody and wheel wash is provided. This is surrounded by a smooth hard surface extending to the site exit. All vehicles pass through and spend sufficient time for effective cleaning in the washing facility before leaving the site. Supervision is provided to ensure that this is carried out effectively.

10.6.3 Stockpiling Operations

The aims of these procedures are to ensure that materials are stockpiled only within the designated process working areas and any release of dust to atmosphere is minimised.

- Stockpiling and offloading operations to the processing plant and equipment is co-ordinated in such a way as to minimise the potential for double handling of material.
- Unloading of materials within the facility is carefully planned to ensure minimum exposure to winds, thereby reducing dust emission to air.
- The aims of the stockpiling procedure is to ensure that management of the stockpile is conducted in such a way that releases of dust to atmosphere are minimised.
- Stockpile areas are clearly and physically delineated to deter vehicles from running over mineral extract at the stock edge.
- Stockpiles are managed to ensure that the profile of material will minimise wind whipping.
- During any stockpiling, stockpiles are profiled and compacted by flattening out peaks and ridges and when partially worked, are re-contoured to prevent ridges or overhanging falls.
- Whenever possible, settled stockpiles are not be broken into when the wind is likely to lift newly exposed dry dust. When this is unavoidable, effective dust control methods are implemented.
- Prior to carrying out any stock handling operations, the dust suppression equipment is checked to ensure that it is working properly.

10.6.4 Monitoring & Reporting

- A high standard of housekeeping is maintained on site.
- Systems for monitoring processes, responding to and reporting pollution incidents have been devised. This information is kept in

a logbook, together with information regarding equipment failure, periods of significant dust emissions off-site and the inspection of roadways, together with any remedial action taken.

- Any complaints received from neighbouring properties are logged and appropriate actions taken to reduce the potential for further complaint.

10.7 Monitoring

Dust monitoring will continue to be carried out on a quarterly basis by Byrne Environmental at the existing monitoring locations, previously agreed with the Planning Authority. If the level of dust is found to exceed the dust deposition limits as outlined above as 350 mg/m^2/day, at the perimeter of the site, immediate action will be taken and additional mitigation measures will be incorporated to control any dust emission.

10.8 Conclusion

The potential for any dust arising from the Tromman Quarry site has been assessed and it is considered that the potential for nuisance impact has been, and is limited to, the immediate vicinity of the activities, even without dust suppression measures in operation, because of the quarried materials' predominantly coarse nature. The potential for nuisance dust impacts is considered to be negligible at the nearest sensitive receptors and dust deposition monitoring results of the existing exposed quarried surfaces and associated industrial activities to the north of the site indicate very low dust deposition levels at the site entrance and along the site boundary.

The impacts that have occurred, are occurring and can reasonably expected to occur have been assessed and do not give rise to any significant environmental impact, given that ongoing monitoring has confirmed operations consistently have cumulatively operated below the guideline figure provided for in the DOEHLG 2004 recommended levels.

Any residual dust deposition impacts resulting from the future de-commissioning and restoration of the quarry will be short lived and all potential dust impacts from the Tromman Quarry site are considered to be reversible i.e. the risk of impact will cease on completion of quarrying and restoration of the site. This outcome has been previously assessed and remains valid within the extant restoration concept.

11.0 TRAFFIC

11.1 Background

A full traffic impact assessment has been carried out by Roughan & O'Donovan Consulting Engineers (RDCE) as recently as November 2009 for application TA900976 and the associated Board decision PL17.235960. The consecutive assessments covering a number of applications as cited in Section 2 of this rEIAR have analysed the prevailing traffic movements in the context of the existing road infrastructure, with junction analysis, vehicle counts and haul route analysis.

However, in this particular instance it is considered appropriate to consider the impact upon vehicle movements that occurred or are occurring from the introduction of the unauthorised structures in the northern part of the site and the resulting change in the makeup of product types sold and the cumulative effects of this shift since 2013.

Furthermore, the continuation of extraction beyond the appropriate date of the extraction consents (August 2018) is also considered. In addition to the RDCE report referenced above, RCDE were also engaged by Keegan Quarries in September 2020 to undertake a Traffic Impact Assessment for the planning application made under Section 34 of the Act for the proposed further development of Tromman Quarry (Meath Co. Co. planning register reference TA200151, RFI Item 5).

Reference is drawn to this report, held at Appendix 11.1 within this Section.

11.2 Historical Vehicle Movements – Baseline Period

The figures previously analysed by RDCE in 2009 related to the immediately preceding sales years, which are widely acknowledged to have seen the highest operating levels for Irish quarries, with Tromman being no different.

Accordingly, sales figures have been provided by Keegan Quarries Limited in consecutive Environmental Impact Statements from the year 2000 up until the most recent application in December 2016 and repeatedly the activity levels with an upper limit of 250,000tpa of aggregates have been assessed as a worst-case scenario. It follows that any vehicle movement activity at levels less than those associated with 250,000tpa are causing less of an impact and no form of intensification / additional impact can be forthcoming.

Accordingly, the historic output levels from the baseline date of 2013 until present are presented and analysed in Table 11.1 and 11.2 respectively.

Sales by Product	Unit by Product	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
RMC	m3	3,282	4,330	7,421	8,903	10,554	17,656	18,253	15,320	18,810	20,784
Blocks	tonnes	4,052	15,787	20,041	22,748	25,660	26,290	25,470	24,570	28,009	29,547
Ags	tonnes	23,291	30,351	40,601	60,054	80,207	85,151	88,489	79,439	90,560	93,645
Ags Pre Cast	tonnes	14,708	20,195	34,865	31,184	24,584	31,635	34,961	31,565	33,704	36,549
Lime	tonnes	3,509	4,158	3,828	5,293	6,152	4,739	5,402	4,429	6,027	7,458
RMC	*tonnes (m3x2)*	*6,564*	*8,660*	*14,842*	*17,806*	*21,108*	*35,312*	*36,506*	*30,640*	*37,620*	*41,568*
	Total annual Aggregate tonnages	**52,124**	**79,151**	**114,177**	**137,085**	**157,711**	**183,127**	**190,828**	**170,643**	**195,920**	**208,767**

Table 11.1 Sales analysis of product by type and equivalent aggregate consumption.

2022	Av.Load Capacity (tonnes)	Annual Loads	Daily Loads
20,784	7	2970	11
29,547	19	1555	6
93,645	25	3746	14
36,549	27	1354	5
7,458	27	276	1
			37

Table 11.2 – Analysis of worst-case scenario year (maximum output) over the baseline timeframe to provide daily vehicle movement figures.

As detailed in Section 2.2 of the 2020 ROD Report, held at Appendix 11.1, an Automatic Traffic Counts (ATC) survey on the R156, R159, R160 and R161 was carried out in 2009. A growth factor was calculated using traffic growth data from a TII permanently fixed traffic counter on the M4 west of Junction 7 (Maynooth). This is the closest TII counter with traffic data extending back as far as 2009.

Analysis within the 2020 ROD Report indicates that the 2020 baseline traffic volume was 3,234 vehicles per day with 315 HGVs or 9.7% of the total traffic volume. The method of projecting the 2009 traffic survey information to subsequent years was verified using a 2016 ATC survey provided by Meath Co. Co. The survey was captured in June 2016 on the R159 west of R159.

The projected 2016 Annual Average Daily Traffic (AADT) on the R156 was compared to the 2016 ATC survey. The projected AADT figure was 3.4% greater than the actual AADT recorded in 2016. The projected HGV figure was within 1% of the HGV figure from the ATC survey. This shows

that the method used to estimate the 2020 baseline traffic was acceptable in the absence of up-to-date data.

11.3 Impacts that have occurred

Table 11.1 illustrates how extraction output has steadily risen from a historic low in 2013 over the subsequent period, most recently in 2022 to c.84% of the levels previously assessed and approved under TA/30334 An Bord Pleanála Reference Number: PL 17.206702. The impacts were assessed against the previously permitted daily vehicle movements of 110 (20 tonne payload) vehicle movements per day.

What is apparent from the figures above is that there has been a shift in sales makeup at the Site with a move to lower volumes but higher value products, which ties in with the development in the Northern precast manufacturing area. This has also coincided with the requirement for greater delivery efficiency with a greater proportion of loads being delivered by articulated vehicle, with a 30-tonne payload.

This has resulted in the number of vehicles being utilised for delivery having dropped to a figure in the region of 67% of the number originally assessed in 2004 whilst the extraction volumes are operating at levels of c.84%. In short, the volume of aggregate being extracted has steadily grown however, due to the nature of the products manufactured at the Site and the volume of material which can be transported per load, traffic movements have not increased at the same rate of extraction and are still well below those previously assessed and considered acceptable.

Whilst it is acknowledged that there are deliveries associated with the manufacturing element of the development, this forms a very small percentage of the overall vehicle movements for the site and therefore the impacts associated with the transfer of aggregate production in to value added products, rather than direct dry aggregate sales, along with a change in the HGV fleet can be said to be have had an positive impact.

11.4 Impacts that are occurring

Considering the sales analysis provided in Table 11.1, the 2022 figures show that sales have steadily grown over the assessment period and were at their highest in 2022. Despite the continued growth in sales, the level of traffic movements at the site have continued to remain at less than those previously assessed and considered acceptable at the site. Therefore, given that traffic currently generated at the site is not any more intensive than that previously considered acceptable, it is considered that the impacts which are occurring are not resulting in any significant effect upon the environment in terms of traffic impacts.

11.5 Impacts that can reasonably be expected to occur

When reviewing the two alternatives that can reasonably be expected to occur, the first would see the site remediated and restored in accordance with existing planning consents with respect to the extraction area and in the northern part of the Site. This scenario would see the loss of employment of the 40 direct staff at the Quarry, with a

significant impact on the 140 indirect staff supported by the extraction of the mineral at the quarry. Following restoration, it is considered that impacts relating to traffic movements would reduce to levels that would be considered negligible in the context of the existing daily vehicle movements.

The alternative outcome that would result from a successful s.37L application would see a continuation of the levels currently experienced with no form of vehicular movement intensification associated with the site being proposed as discussed in the separate EIAR for the S37L application.

11.6 Conclusions

Development of the range of products being sold from the quarry, linked directly to the structures in the manufacturing part of the site has resulted in vehicles with larger payloads being able to be utilised. This has meant that whilst output has increased (c.84% of that previously approved), the numbers of vehicle movements associated with activities at the site remains at c.67% of the number originally assessed in 2004 and deemed acceptable.

Whilst it is acknowledged that there are deliveries associated with the manufacturing activities in the northern part of the Site, this forms a very small percentage of the overall vehicle movements for the Site and therefore the impacts associated with the transfer of aggregate production in to value added products, rather than direct dry aggregate sales, along with a change in the HGV fleet has avoided any

intensification in vehicle movements associated with the Site, than those previously assessed and considered acceptable. As a result, the impacts which have occurred, are occurring, and are considered reasonably likely to occur are considered acceptable and have not, are not and would not result in any significant effects upon environment in terms of traffic.

12.0 CULTURAL HERITAGE

An archaeological evaluation of the application site was most recently prepared by Arch-Tech Limited for the 2009 EIS to accompany application TA900976 and the associated Board decision PL17.235960.

Archaeology, like geology in this instance does not alter in the intervening timeframe as provided for within this rEIAR. Accordingly, it is considered unnecessary to revisit and update the previously accepted report.

All soils had been removed within the northern manufacturing area and the extraction areas at the relevant baseline dates in 2013 and 2018, resulting in there being no opportunity for impact on Cultural Heritage Assets during the timeframe being considered.

12.1 Impacts that have occurred.

No impacts on Cultural Heritage have occurred during the timeframe from 2013 to present day.

12.2 Impacts that are occurring

The manufacturing part of the Site remains under hardstanding and extraction activities are continuing to take place within the previously created disturbed footprint of the quarry. Accordingly there are currently no potential impacts upon Cultural Heritage which are occurring.

12.3 Impacts that can be reasonably expected to occur

With the potential implementation of the approved restoration schemes for the site, there will be the associated placement of soil making materials around the margins and the subsequent flooding of the quarry to a level of some 65m AOD. There will be no further removal of soils or limestone resource and therefore no impacts on Cultural Heritage Assets will occur.

The alternative approach that is the subject of the accompanying s.37L application would see the continued exploitation of the limestone resource. There is no further virgin topsoil stripping proposed by the proposed continuation and further development of the existing quarry void and therefore there will be no potential impacts in relation to cultural heritage.

12.4 Conclusion

It is concluded that there was no potential for impacts to cultural heritage to have occurred during the timeframe being considered as there was no removal of insitu virgin material during this period. For the same reason, there are no impacts which are occurring at the site, nor will there be any impacts as a result of each of the future scenarios.

13.0 WASTE MANAGEMENT

13.1 Introduction

Given that the SC application is considering two distinct operational types, it is considered that there are two distinct waste streams. The first covers the waste arising from the manufacturing stream associated with the activities undertaken in the northern part of the site. The second relates to the extraction activities that principally revolve around plant and machinery wastes associated with routine maintenance and repairs and potential accidental fuel and oil spillages and the extractive waste that is an inevitable consequence of quarrying that is covered by the Extractive Waste Regulations. Each of the waste streams is considered in turn below.

13.1.1 Manufacturing Waste

The precise nature of manufacturing employed in the pre-cast manufacturing unit ensures that wastage is kept to an absolute minimum with only the exact amounts of materials utilised in the production of the product. Therefore, the minimal wastage arising is separated and stored or placed into skips for either recycling or removed from Site for disposal via a licenced haulier.

13.1.2 Extractive Waste

The activities related to quarrying are not considered to give rise to any specialist requirements and they can be managed by a series of Good

Housekeeping measures as part of an overall waste management strategy outlined above from the Environmental Management System.

The effectiveness of the environmental management systems employed at the site is illustrated by the general appearance of the quarry, with the quarry waste products being limited to overburden storage and the quality of the monitored water, discharged from the site as outlined in Chapter 6.

13.1.3 General Site Waste Management

In the first instance, the totality of the activities that are taking place on site are covered by the Site's Environmental Management System (EMS) that was promoted as part of the application and EIS that covers the Southern half of the site namely TA900976 and the associated Board decision PL17.235960. With regard to waste management and control the company's EMS provides as follows:

The controls and mitigation measures for minimising the quantities of wastes generated and for minimising the potential impacts of storage and disposal of wastes are summarised as follows:

- *Waste oil from maintaining vehicles and plant machinery and hazardous wastes are stored in a designated bunded storage area pending disposal by a licensed waste disposal contractor;*
- *Wherever possible materials from site construction activities and from workforce management and administration that are able to be recycled will be separated at source;*

- *Small containers will be strategically located close to offices, canteens and similar areas to separate useful paper, cardboard, wood, glass, plastics and metals;*
- *Operational activities including the delivery of materials will result in the generation of wastes such as wood off-cuts, plastic and cardboard packaging, shipping pallets and metals. Waste and materials separated for recycling will be collected on a monthly basis and transferred to storage containers in a designated Waste Storage Area on the site;*
- *Inspection of storage facilities for wastes and recyclables will be done on a daily basis.*
- *All general waste that is unable to be separated or is otherwise not suitable for recycling will be collected for off-site disposal by licensed waste disposal contractors at regular intervals. Records of quantities of wastes disposed of or sent off-site for recycling and the contractor used will be kept as outlined in procedure EMS-008.*
- *In order to ensure that site staff properly segregate waste materials, it is the responsibility of the Quarry Manager to ensure all staff are trained and made responsible for ensuring site housekeeping and the proper segregation of waste;*
- *The following classes of materials are segregated into individual storage containers;*

    - *Waste oils / greases / paints*
    - *Wood*
    - *Plastics*
    - *Glass*
    - *Cardboard / Paper*
    - *Domestic refuse*

- *Metal*
- *Contaminated soil (generated by oil spills etc)*
- *Waste aggregate materials segregated into different size categories*
- *Waste concrete / blocks*
- *Batteries*
- *Rubber conveyor belts*

- *All segregated wastes will be collected and sent for reuse or recycling by a suitable licensed waste contractor.*
- *Suitable licensed waste contractors will be employed by Keegan Quarries Ltd to ensure that waste materials which cannot be reused or recycled at the site are collected and correctly disposed of at a waste licensed facility*.

13.2 Impacts that have occurred

With the introduction of an EMS in 2010 in advance of the timeframe being considered, it is not anticipated that there will have been any significant waste management related impacts occurring in the period 2013 to present. This conclusion is considered to be borne out by the contemporary water quality results for the site and the general appearance of the site from the aerial photography provided in Section 3.

13.3 Impacts that are occurring

Impacts that are occurring have occurred cumulatively since the completion of construction in 2017 and have not altered since the 5th August 2018 without any adverse impact upon the environment. The waste management systems that are in place continue to provide appropriate management of the associated potential impacts associated with the same.

13.4 Impacts that can reasonably be expected to occur

Giving consideration to the two alternatives that can reasonably be expected to occur at the site in the future. The first would follow an unsuccessful attempt to regularise the quarry activities with the site being restored via the delivery of the approved restoration concept for the quarry which would result in a water body and associated edged treatment and planting. In addition the competent authority would need to seek the removal and remediation of the northern element of the site that constitutes the manufacturing element. It is considered with the continued application of the adopted standards within the Company's EMS, that this would not give rise to any potential waste management related impacts, with all materials being suitably removed from site and re-used, recycled or disposed of, as required, via the most appropriate fashion.

Likewise, the continuation of activities under the proposed s.37L application is considered unlikely to give rise to any potential waste management related as detailed within that EIAR.

13.5 Conclusions

The implementation of an EMS in 2010 containing waste management measure and the compliance with the Extractive Waste Regulations 2009 has ensured that the unauthorised development has not resulted in a significant impact in any of the three stages of development required to be considered.

Therefore, the impacts that have occurred, are occurring and can reasonably expected to occur have been assessed and do not give rise to any significant environmental effects.

14.0 SOILS AND NATURAL RESOURCES

14.1 Soils and Subsoils

Best practice guidance promotes that the impact upon soils and subsoils should be considered as part of the EIAR. In this instance there has been no impact on either soil or subsoil during the periods of consideration; 2013-present in the precast manufacturing facility towards the northern extent of the site; and 2018 to present in the quarry void. There has not been any soil material movements in the wider quarry since the 5th August 2018 and therefore this element will be considered no further as it is not applicable in this instance.

14.2 Aggregate Material

A requirement exists that due regard be had to the likely significant direct and indirect consequences that a development proposal would have on the environment which might result from the use of natural resources.

Aggregate, limestone powders and a variety of precast and ready mixed concrete products are all derived from naturally occurring, finite resources extracted at the quarry. The type of limestone worked at Tromman quarry is a high purity calcium carbonate limestone. The properties of the limestone permits a broad range of end uses as illustrated by the wide range of manufacturing facilities at the site.

It is considered that the mineral extraction at the site from 2018 to present has not given rise to a significant reduction in the volume of resource in Meath or even specifically as previously outlined at Section 5, with Waulsortian Formation.

Global environmental issues like fossil fuel use and alternative energy sources are matters subject to national/international treaties and agreements. They are considered outside the scope of this rEIAR, as the cumulative contributions of this particular development to such matters are insignificant in a national context.

The Applicant has conserved the natural resource by maximising the potential of the limestone by way of ensuring that the end use is maximised, thus achieving the most prudent and efficient use of this high-quality non-renewable resources.

14.3 Soil

All soils has been removed within the northern manufacturing area and the extraction area at the relevant dates in 2013 and 2018 for the two types of development and in combination activity, resulting in there being no opportunity for impact on soil resource. Therefore, the impact upon the soils is considered to be complete and as the land has been permanently removed from agriculture, it is a permanent loss.

14.4 Impacts that have occurred.

No impacts on material assets have occurred during the time frame of 2013 to present.

14.5 Impacts that are occurring

Limestone continues to be extracted at the rates as outlined in Table 11.1 and is a permanent removal. However, as outlined in Section 5 of this rEIAR, this is considered to be an inconsequential volume when considered in the context of the limestone formation as a whole.

14.6 Impacts that can be reasonably expected to occur

With the potential implementation of the approved restoration schemes for the site, there will be the associated placement of soil making materials around the margins and the subsequent flooding of the quarry to a level of some 65m AOD. There will be no further removal of soils or limestone resource.

The alternative approach that is the subject of the accompanying s.37L application would see the continued exploitation of the limestone resource, as described in the accompanying EIAR for the S37L application. This development would also see the removal of the large overburden mound / soil making material that is currently immediately to the south of the manufacturing zone and the use of the same in lake margin treatment. The impact on the limestone resource would be negligible in the context of the formation as a whole and the impact on soils is considered to be neutral given that limited volumes of soil would be repositioned to affect ultimate beneficial restoration of the Site.

14.7 Conclusion

The impact on the geological resource that has occurred since August 2018 is permanent but minimal in the extent to which the volume affects the Waulsortian Formation as whole. For the same reasons, impacts occurring as a result of extraction at the site are considered to be limited. Any impacts likely to occur in the future are not considered to be significant.

There is no further soil stripping for the development proposed the impact upon the soils is considered to be complete and as the land has been permanently removed from agriculture, it is a permanent loss.

There is no further impact on Soil resources proposed as part of this development and the main body of the site is proposed to revert to a water body with treatment utilising some soils and overburdens at the margins

15.0 SOCIO-ECONOMIC IMPACTS

15.1 Introduction

This section considers the impact of the development in the context of population/settlement, employment and other socio-economic effects.

15.2 Employment

The existing operations (stone, powders and fill; Precast and concrete block manufacture) at Tromman provide direct employment for some 140 staff and a further 40 full-time sub-contractors with a direct wage bill and associated contractors wage bill of c.€12 million. Keegan Quarries makes a significant contribution to the rural Meath economy, providing a variety of jobs across a highly skilled workforce. A significant amount of the Company's total revenue stream is derived from export sales to the UK, bringing external revenue into the Irish and Meath economy. Such is the importance of the export market that the growth and expansion in the business experienced over the assessment period has seen internal investment focussed on satisfying the demands of this area.

The Keegan Group of companies make a significant contribution to the economic prosperity of County Meath. Census 2022 data[6] shows that the population of Meath grew by 13% to 220,826, which means the number of people in the county rose by 25,782 between April 2016 and

[6] Available at https://www.cso.ie/en/csolatestnews/pressreleases/2023pressreleases/pressstatementcensusofpopulation2022-summaryresultsmeath/

April 2022. Over the same period, Ireland's population grew by 8% from 4,761,865 to 5,149,139. This follows an increase in population evident in the 2016 census which showed that the population of Meath showed an increase of 5.9% from the 2011 to the 2016 census.

The trend between 2011 and 2022 shows that Meath has experienced a sustained above-state increase in population over the last 10+ years. The employment generated across the group of companies is vital to the local economy, both in terms of the direct employment at the Tromman site but also in the associated downstream uses associated with the end use of the mineral products. Figure 15.1, shows the employee numbers for the years covering the timeframe being considered, indicating continued growth.

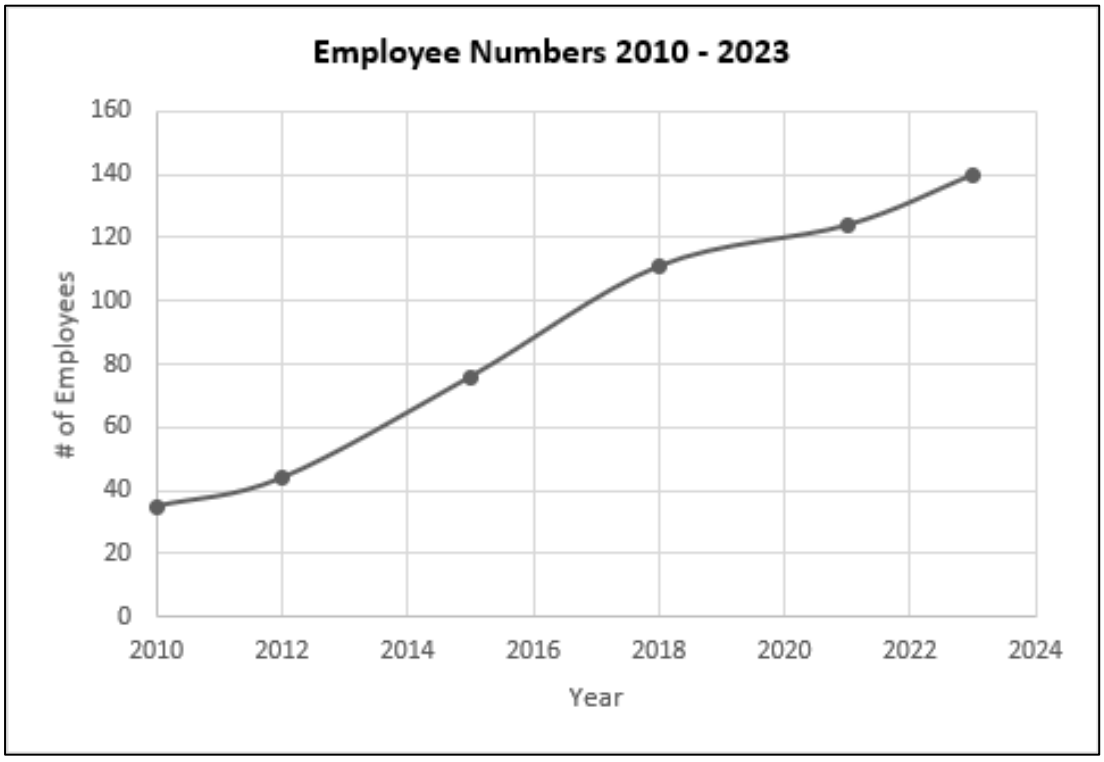


Figure 15.1 – Keegan Group - Employment Figures

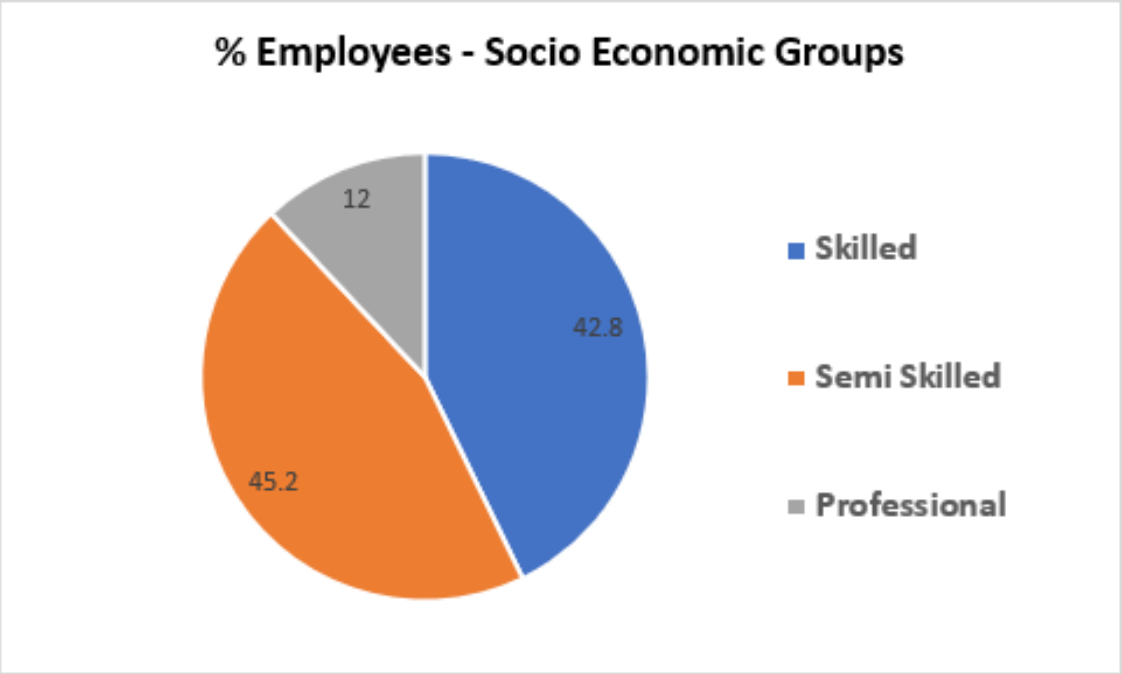


Figure 15.2 – Employment by percentage of Socio Economic Groups

Figure 15.2 illustrates total employment at the company's Tromman Site, expressed by skill sectors. The figure highlights the breadth of skills covered at the Site, extending beyond those normally expected in a traditional extraction/manufacturing site.

15.2.1 Local Employment

The 2016 census showed the average travel time of commuting workers in Ireland is 28.2 minutes. In 2022, the average commuting time was just over 29 minutes.

Meath however, due to the high numbers of people commuting to Dublin, had the highest commuting time of 34.6 minutes at the census in 2016 (the 2022 census data for the county has not yet been published).

Creating employment and generating economic activity in areas outside of Dublin, provides significant social and environmental benefits, as the active labour force do not need to spend hours commuting to Dublin for well remunerated employment. Upon analysis of the Keegan Group workforce the majority of employees work and live within a 10 km radius of travel, as shown in Figure 15.3. This results in significant induced local economic benefits with wages being spent locally on goods and services. Shorter commutes also results in obvious benefits in terms of reduced fuel consumption and emissions associated with reduced traffic movements and reduced journey times.

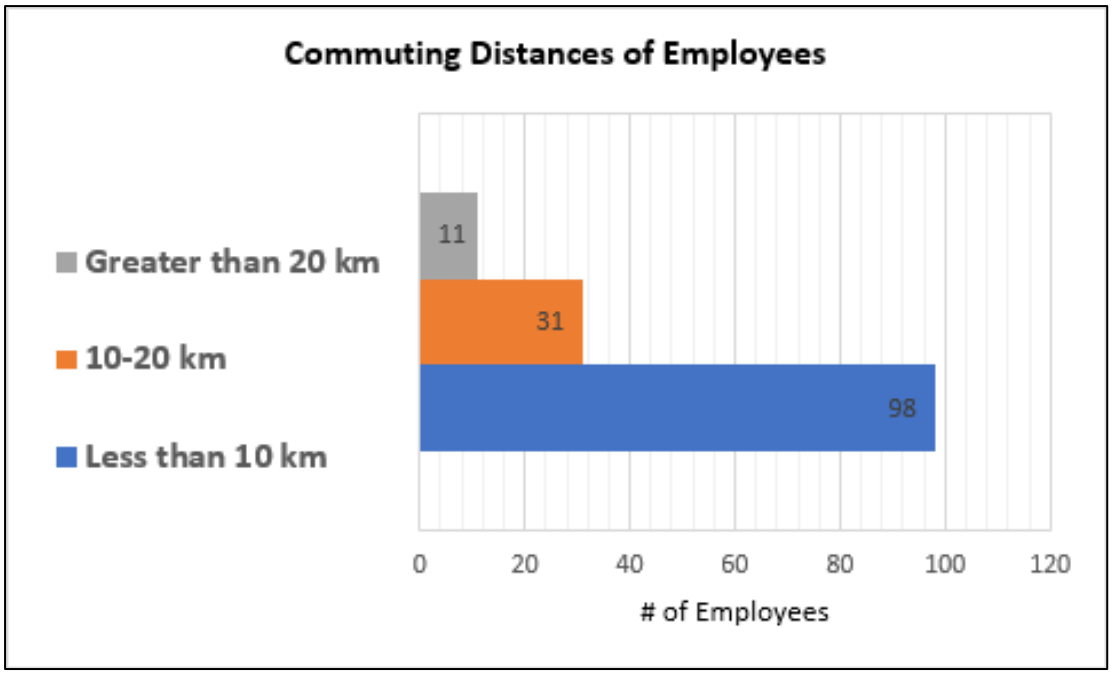


Figure 15.3 Employee average commuting distance to Tromman Quarry

15.2.2 Housing and Infrastructure Delivery

Department of Housing, Local Government and Heritage data[7] describes how there were 13,318 people homeless across Ireland in December 2023. The number of people who are homeless rose by 2,186 people since December 2023, an 18% increase on the previous year. In Meath, there we some 234 adults accessing emergency accommodation in December 2023 with 88 families across the Mid-East Region.

As a result of the recognised housing crisis within Ireland, the Government has introduced the "'Housing for All - a New Housing Plan for Ireland". This is the government's housing plan to 2030. It is a multi-annual, multi-billion euro plan which seeks to improve Ireland's housing system and deliver more homes of all types for people with different housing needs. The plan estimates that Ireland will need an average of 33,000 new homes to be provided each year from 2021 to 2030.

Statistics from the Department of Housing, Local Government and Heritage[8] states that 22,443 new homes were completed in the first nine months of 2023- an increase of 14% on the same period last year. The Housing for All Q3 2023 Progress Report[9] states that:

"The coming year will see over €5 billion of capital investment in housing, a record figure. We will continue to increase the housing stock in the country while progressing major reforms in our housing system. We can

[7] Available at https://www.gov.ie/en/collection/80ea8-homelessness-data/

[8] Available at https://www.gov.ie/en/publication/97015-housing-for-all-action-plan-update-and-q3-2023-progress-report/

[9] Ibid

look forward to a strong 2024, with almost 24,000 new homes having commenced in the first 9 months of this year. There are currently over 22,600 social homes at various stages of delivery and 2,700 additional affordable homes already approved for funding.".

The Government has stated[10] that in response to Brexit and wider challenges such as climate change, a core tenet of the Government's strategy is to bring greater economic resilience to Ireland's regions by addressing the infrastructure deficits that currently exist. Under this €116 billion plan, public capital investment will reach 4% of national income, placing Ireland well above the recent EU average of 2.9%.

When launched in 2018 Project Ireland included over 150 projects which each have a value in excess of €20 million. This pipeline of projects has continued to expand and evolve since then, with numerous major projects being completed and many more projects entering into the pipeline. There are now over 200 large projects at various stages of the project lifecycle.

15.3 Demand for Aggregates and Mineral Products

The Mineral Products Association (MPA; trade association for aggregates in the UK) estimates that 50 tonnes of aggregate is required for the construction of a typical house. With the widely recognised unprecedented demand in Ireland for housing and the programme of infrastructure delivery which is ongoing, naturally the demand for

[10] Project Ireland 2040, Prospects Ireland's Pipeline of Major Infrastructure Projects, Investment Projects and Programmes Office, December 2019

aggregate used in the construction of housing units and infrastructure projects reflects this demand.

It has been, and continues to be, of vital Socio Economic importance that a steady and adequate supply of aggregate in Ireland is maintained, attempting to satisfy society's long-term housing and infrastructure requirements.

15.3.1 Socio Economics and the import of Export Markets

The quarry in Tromman is a high-quality mineral resource and it must be utilised to its full value, with properties that make it ideal for high quality finished and export markets.

Without the continued operation of the quarry the Company's export business, which is focussed on the products manufactured at the Tromman site would collapse.

Enterprise Ireland, the government organisation responsible for the development and growth of Irish enterprises in world markets states that: "Success in export markets is crucial to the long-term growth of Irish businesses and the Irish economy. Support for companies focused on growth through international sales is a priority for Enterprise Ireland."

Enterprise Ireland recognises the value of the products manufactured at the Tromman site and have been fully supportive of Keegan Precast operations and have been involved in developing new products and markets over the recent years.

15.4 Impacts that have occurred.

With the progressive development of structures at the site and the associated product expansion outlined, the diversification in the products manufactured at the site has mirrored this expansion. Turnover has increased from c.€13 million in 2013 to c.€38 million in 2022 and employment levels have grown from 90 direct employees in 2013 to the current level of 140 direct employees along with the associated wage increase from c.€2.5 million in 2013 to a total of c.€12 million in 2022.

This is a tangible positive economic impact in this rural location in Meath which assists in diminishing the daily commute towards Dublin. The introduction of the additional capacity and precast twin wall factory facility has further opened up export markets to the company.

Over the course of the assessment period, projects which have been supplied from the Tromman site include housing; infrastructure; healthcare; and education, for example:

- Keegan Precast supplied all of the vertical wall elements for the National Children's Hospital in Dublin. The new children's hospital will be 7 storeys at its highest, comprising of approx. 160,000m^2 of accommodation;

- Keegan Precast were involved in the Design and build of 2 new primary school buildings in Mullingar, Co. Westmeath, with a total combined floor area of 3,150m^2 for the Department of Education;

- Keegan Precast completed the supply to a new healthcare and nursing facility at Peamount Healthcare, Newcastle, Co. Dublin. This involved the construction of a new two storey healthcare unit to accommodate 100 individuals;

- Keegan Group completed the supply of the precast element at the former ESB bulk fuel storage facility at Ringsend, Dublin Port for the National Oil Reserves Agency to refurbish and upgrade the existing storage facility to enable the storage of gas, oil and diesel for the next 20 years, and storage for approx. 140,000m^3 of oil.

Over the assessment period, Keegan Group has also attracted inward expenditure in to Ireland via its supply of construction materials for projects in the UK. As an example, Keegan Quarries supplied a range of construction materials for the completion of the Swansea University Halls of residence, providing beds for over 1600 students.

Figure 15.4 – Swansea Halls of Residence Projects

15.5 Impacts that are occurring

The current operations at the quarry maintain the supply of the primary resource to the added value manufacturing element of the Site which has maintained the competitive capabilities of the business with continued sales growth anticipated in these value added products and an associated reduction in dry sales, thus maximising the end use of the high purity resource. Direct employment figures are currently at 140 direct employees, with associated indirect employment for an additional 40 people.

The site supplies a range of aggregates and pre-cast products to a number of construction projects currently ongoing in the wider Dublin region. For example, works are currently under way for a 258-home

residential scheme in Belmayne, Dublin. This €100+ million scheme with Sisks as the design and build contractor is set to achieve LEED Gold standard sustainability (Leadership in Energy and Environmental Design, US Building Counsil). Fifty of the homes will be available for social housing and the remaining 208 homes for private rental. Keegan Precast and Keegan Quarries are involved in delivery wall, slabs and ready-mix concrete to the site.

2023 also saw Keegan Precast deliver walls and floors to Oxford University for it's new 'Life and Mind Building' as part of a £200 million project. The building represents the largest building project ever undertaken on behalf of the University and will be its largest teaching facility. The building covers 25,000 sqm set over two wings.

The continuation of the business results in the continuation of expenditure into the local economy via direct purchases, the use of local services and via expenditure of wages by local staff. The site also contributes to public expenditure through the payment of business rates and taxes. Given the above, the socio-economic impacts which are occurring are considered to be positive.

15.6 Impacts that reasonably can be expected to occur

When considering the two alternatives that have been assessed throughout the REIAR the outcomes substantially differ.

The high purity limestone resource at Tromman Quarry underpins the added value manufacturing elements of the Keegan Groups business

which allows it to manufacture more specialist products and thereby increases turnover from the established levels of a traditional aggregate, ready mixed concrete and block producer. In the situation where the site is closed, restored and the northern element remediated, the remaining limestone resource will remain unworked.

Given that the business relies upon the limestone resource in all its downstream activities, this scenarios would have serious ramifications upon the business with a wholesale contraction of the business and the associated employment levels likely. The socio-economic impacts of such action are considered to be significant.

This scenario would see the loss of employment of the 40 direct staff at the Quarry, with a significant impact on the 140 indirect staff supported by the mineral at the quarry.

The alternative, that is to be considered fully under the subsequent s.37L application would see a continuation of the supply of the resource and therefore a continuation of the business model including direct and indirect employment and significant foreign export, as currently experienced, continue of the lifetime of the quarry.

15.7 Conclusions

The quantifiable socio-economic contribution of the Tromman operation is known and the importance at a local, regional and on a national level through the export business is established. In terms of impacts that have occurred, a trend of increased turnover, expenditure and employment has been observed over the assessment period.

In terms of impacts which are occurring, the business provides direct employment for 140 direct staff and 40 indirect staff. The site therefore is resulting in significant economic benefits within the local and regional economy.

In terms of impacts which are reasonably likely to occur, the two alternatives that have been assessed throughout the contrast significantly in terms of socio-economic impacts.

The high purity limestone resource at Tromman Quarry underpins the added value manufacturing elements of the Keegan Group's business. The loss of this resource would have significant ramifications upon the business and would result in the wholesale contraction of the business and the associated employment. The socio-economic impacts of such action are considered to be significantly adverse.

The alternative is the continuation of the business model as currently experienced, with the anticipated continued growth of the value-added element of the business and the associated prosperity. The continued operation of the site would also aid in the delivery of

important public infrastructure and housing, both of which have been identified as major national issues to be addressed by the Government.

16.0 CLIMATE CHANGE, ACCIDENTS AND DISASTERS

16.1 Introduction

This section of the EIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. The EIA Regulations require applicants to include within an EIAR, a description of the likely significant effects on the environment of the proposed development resulting from, among other things—

"*the impact of the proposed development on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the proposed development to climate change*".

16.2 Baseline Setting

Climate change not only means changes in the average climate such as temperature but also changes in the frequency and intensity of extreme weather and climate events. Though climate change projections, like all projections of the future, are subject to uncertainty, the latest climate modelling projections by Met Eireann for Ireland are in broad agreement with previous research[11] on the subject.

[11] Available at: https://www.met.ie/epa-climate-projections-2020

In terms of temperature trends, the EPA describes[12] how Ireland's climate is changing in line with global trends, with a temperature increase of, on average, 0.8°C compared with 1900. By the middle of this century (2041 – 2060) the average annual temperatures are projected to increase by between 1–1.2℃ and 1.3–1.6℃ depending on the emissions trajectory. The number of warm days is expected to increase and heat waves are expected to occur more frequently.

In terms of precipitation, the EPA also describes how Ireland has seen an increase in average annual national rainfall of approximately 60mm or 5% in the period 1981-2010, compared to the 30- year period 1961-1990. Significant reductions are expected in average levels of annual, spring and summer rainfall. Projections indicate a substantial increase in the frequency of heavy precipitation events in Winter and Autumn (approx. 20%).

16.3 Impacts that have occurred

The only potential for direct and indirect climate change impacts from the development over the assessment period is considered to have been via the emissions resultant from the burning of hydrocarbons as fuel both on site and in the transportation of materials to and from the quarry.

[12] Available at: https://www.epa.ie/environment-and-you/climate-change/what-impact-will-climate-change-have-for-ireland/#:~:text=Ireland's%20climate%20is%20changing%20in,depending%20on%20the%20emissions%20trajectory.

To date, there have been limited technological advances with respect to emissions in the delivery method/ transportation of aggregates, with improvements focusing on enhanced performance and rating of the diesel engines in the HGV's.

The mineral can only be worked where it is found and the application site is one which is well placed to serve a number of market areas throughout the Midland and Graeter Dublin Regions of Ireland and which has been demonstrated via this REIAR, not have resulted in any significant effects upon the environment in terms of impacts that have occurred.

16.4 Impacts that are occurring

Mineral extracted at the site is processed using mobile crushing and screening plant, as has been the long established and previously approved practice at the quarry. Concrete products are manufactured as described earlier in this REIAR. Due to the nature and scale of this processes which are undertaken at the site in the context of worldwide climate change, the development at the site is not considered to be resulting in any significant effects upon the environment in terms of impacts that are occurring.

16.5 Impacts that can reasonably be expected to occur

With regards to the two scenarios being considered, if the site was to close and the quarry restored, the result would be a beneficial impact in terms of climate change, due to the lack of any processes continuing

to take place and therefore the associated fuel consumption and emissions associated with the quarrying and manufacturing processes.

The alternative scenario, being considered in the accompanying s37L application would continue operations in the same manner as has previously been undertaken at the site over the assessment period and which continues to currently be employed at the site. It is considered unnecessary to repeat this assessment here, save to say that the EAIR for the S37L Application concludes that the proposed development is not anticipated to result in any significant effects upon the environment in terms of climate change.

16.6 Accidents and Disasters

Given the nature of the processes on-site and the experience of the applicant in extraction, transporting and handling minerals and in operating quarry plant and machinery, the potential for accidents and disasters relating to the processes are considered to be limited. No accidents or disasters have been experienced at the Site over the assessment period and operations at the site have been and continue to be controlled by a multitude of legislation and adopted best practice procedures.

Activities which have occurred, are occurring and are reasonably expected to occur are all covered by a host of health and safety legislation and the site has been and continues to be subject to regular monitoring and inspection by the relevant regulatory authorities.
Extreme weather events such as the 1 in 100 year storm event have been modelled within the H&HIA (held at Appendix 6.1). The assessment

demonstrates that during such an events, surface waters can be wholly managed within the site, with no risk to neighbouring land.

Given the temperate climate of the island of Ireland, it is considered that even with the increasing volatility of the weather events that are predicted in the future, it is not anticipated that these events would have the potential to give rise to a natural disaster at the site.

16.7 Conclusion

The potential for likely significant impacts upon the environment in terms of climate change, resultant from the development are considered to be limited given the scale and nature of the development.

The potential for direct and indirect climate change impacts from the development is considered to primarily through the emissions resultant from vehicle movements associated with the development.

Given the worldwide geographic location of the site (in the Midwest of Ireland, in the mid-latitudes), it is predicted that the development has not, is not and is not reasonably likely to significantly contribute to, or be adversely affected by, climate change. The development is considered to have sufficiently resilience and capacity to have dealt with and continue to deal with the most likely consequences of climate and storm events.

Given the nature of the processes undertaken on-site and the experience of the applicant, the potential for accidents and disasters relating to the processes are limited and, in any event, are controlled by a multitude of legislation and in-house best practice and management systems.

17.0 HUMAN HEALTH

17.1 Introduction

This section of the rEIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. The EIA Regulations require the Applicant to consider the impacts of the development upon human health. As detailed in Section 1 of this EIAR, this topic is covered across a number of the sections of this rEIAR (see Table 1.1 for convergence).

In this regard, the consideration of human health is a prerequisite of the relevant guidance and legislation governing target levels with respect to:

- Water Quality Standards (Section 6);
- Noise Emissions (Section 7); and
- Air Quality (Section 10).

Each of the above sections of the rEIAR explicitly references the appropriate guidance when establishing whether the proposed development is acceptable in human health terms and indeed in the case of noise and air quality, considers wider guidance from the World Health Organisation.

17.2 Baseline Setting

The site is currently operated in accordance with the relevant standards for human health set out across a variety of legislation, good practice

guidance and other regulatory regimes. Best practice and operating procedures have been, and continue to be in place at the site to ensure a healthy and safe working environment. As detailed in Sections 7 and 10, air quality and noise monitoring data collected at the quarry show no exceedances in accepted levels.

17.3 Impacts that have occurred

Consideration of the potential for impacts upon the water environment and thereby on human health over the assessment period has been explicitly undertaken by measurement against the relevant standards provided in guidance and legislation as referenced in Section 6 of this EIAR and the accompanying H&HIA held at Appendix 6.1.

The H&HIA has assessed the risk of derogation at local water supplies over the assessment period, stating that the piezometer network provides sufficient coverage for groundwater level and quality monitoring to check that there is no risk of impact at local water supplies.

Consideration of the potential for impacts from noise on human health has been explicitly undertaken by assessment of noise readings taken over the assessment period against the standards provided in guidance and legislation, as referenced in Section 7 of this EIAR.

The following policy documents, standards and guidelines relevant to the baseline noise monitoring survey are relevant to the specific monitoring procedures adopted as part of the baseline noise survey:

- Quarries and Ancillary Activities, Guidelines for Planning Authorities, April 2004, Department of the Environment, Heritage and Local Government. (DoEHLG Guidance); and

- Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-Scheduled Minerals), Environmental Protection Agency (2006).

Noise monitoring data from the locations around the boundary of the quarry has been reviewed and shows no exceedance in accepted limits.

Consideration of the potential for impacts upon human health from air emissions has explicitly been undertaken by measurement against the standards provided in guidance and legislation, as referenced in Section 10 of this rEIAR.

The assessment with regards to air quality has primarily been undertaken with cognisance to the Institute of Air Quality Management (IAQM) guidance document entitled Guidance on the Assessment of Mineral Dust Impacts for Planning (2016 V1.1) and World Health Organisation (WHO) Global Air Quality Guidelines (AQGs) which were released in September 2021.

Dust monitoring data from the locations around the boundary of the quarry has been reviewed and shows no exceedance in accepted limits.

17.4 Impacts that are occurring

As described at Section 6, current water quality monitoring shows that there has been broad compliance with prescribed standards over the assessment period. This suggest that drainage arrangements and settlement infrastructure at the Site over the assessment period have been and remain adequate.

As described at Section 7, noise monitoring is undertaken at the quarry on a quarterly basis. The data shows that the quarry is operated in accordance with prescribed limits, with the daytime noise limit of 55 dB $L_{Aeq, 1\ hour}$ from quarry activities exceeded only on a very small number of occasions over the 10 years of monitoring.

As described at Section 10, the dust deposition rate results recorded at the quarry are well in accordance with the limit value of 350 mg/m^2/day as recorded over the last 10 years to include impacts that are occurring, as demonstrated via the deposition results presented for quarters 1 to 3 of 2023. Therefore, the overall effect is considered to be 'not significant'.

17.5 Impacts that can reasonably be expected to occur

In terms of the two scenarios, In the event that the development is not regularised and the quarry is closed and restored, activities associated with the restoration of the site would result in minor short-term impacts, as described in Sections 7 and 10. Following which all environmental impacts associated with the site, including impacts upon human health, would become neutral with the cessation of all activity at the site.

The impacts upon human health resultant from the continued operation scenario is assessed within the EIAR which accompanies the s37L application. The EIAR concludes that the proposed development would not result in any significant effects upon human health.

17.6 Conclusion

The impacts resultant from the development at the site over the assessment period and as a result of current activities upon human health are considered to have been fully covered within the relevant sections of the rEIAR; namely the Water Environment; Noise and Air Quality Sections (Sections 6, 7 and 10).

All of these sections identify relevant guidance and legislation which has been implemented to protect human health and demonstrates how monitoring results from the quarry demonstrate how these practices and working methods have achieved compliance over the assessment period and therefore have been appropriate and adequate for protecting human health. The development currently being undertaken at the Site continues to follow the best practices already observed at the quarry which have been shown to accord with the relevant standards.

With regards to impacts which are likely to occur in the future, if operations were to cease all impacts upon human health would become neutral. In the eventuality that development continues at the site, the impacts are assessed within the EIAR which accompanies the s37L application. The EIAR concludes that the proposed development would not result in any significant effects upon human health.

Given the same, the impacts that have occurred, are occurring and can reasonably be expected to occur have not and would not result in any significant effect upon the environment by virtue of human health impacts.

18.0 INTRA AND INTER-CUMLATIVE IMPACTS

This section of the rEIAR is prepared by Chris Tinsley MRTPI, whose competency is set out at Section 1. The rEIAR has considered the environmental aspects within and around the site and assessed the impacts that have occurred, are occurring and that can be reasonably expected to occur as a result of the unauthorised development.

Regulation 2 (e) (v) requires the applicant to provide a description of the likely significant effects on the environment of the proposed development resulting from, among other things- the cumulation of effects with other existing or approved developments, or both, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources.

The cumulative effects assessment, considered in this section, for the project follows the guidelines as set by the Institute of Environmental Management and Assessment (IEMA).

IEMA's guidelines recognise two major sources of cumulative effects:

- Intra-project effects – These occur where a single receptor is affected by more than one source of effect arising from different aspects of the project. An example of an intra-project effect would be where a local resident is affected by dust, noise and traffic disruption during the construction of a scheme, with the

result being a greater nuisance than each individual effect alone; and

- Inter-project effects – These effects occur as a result of a number of past, present or reasonably foreseeable proposed developments, which individually might not be significant but when considered together could create a significant cumulative effect on a shared receptor and could include developments separate from and related to the project.

Cumulative impacts may arise from the combined effects of a number of existing or proposed developments, in combination with the proposed development being evaluated, on a single receptor/ source. Where appropriate, potential cumulative effects have been identified in the individual environmental assessments contained within this EIAR, in the reports on air quality, noise, biodiversity, water environment and landscape and visual impact, for example.

Consideration has been given to how the different environmental effects of the development will interact and how the development will interact with other developments in the area with each specialist report/section of the rEIAR.

18.1 Intra Cumulative Effects

Intra cumulative impacts can occur where a single receptor is affected by more than one source of effect arising from different aspects of the project. This has been assessed at relevant sections of the rEIAR. For

example at Section 7, the NIA considers the worst case scenario assuming that haul road movements, excavator and mobile plant would all be operating concurrently.

The potential cumulative effects have been identified in the individual environmental assessments contained within this EIAR, where applicable and, given that the recorded levels of impact accord and compliance with the limits as prescribed in the various guidance and legislation, it is concluded that no one of the potential receptors are subjected to all of the effects of the development at once. As such, the development is not considered to have or be having, any unacceptable intra cumulative impacts.

18.2 Inter Cumulative Effects

This rEIAR has demonstrated that no significant effects upon the environment are considered to have occurred, be occurring or reasonably be expected to occur as a result of the development.

In order for there to be inter cumulative impacts, it is a practical necessity for there to be an overlap (accumulation) of impacts with other developments / projects creating similar effects.

Following consideration of the various technical sections of this rEIAR and accompanying reports, the vast proportion of the impacts arising from the development are considered to be sufficiently remote that the potential for them to overlap with other operations/ consented development is limited. Where appropriate, the potential for inter

cumulative impacts have been considered in more detail in the individual sections.

There is a rock hard quarry operated by Kilsaran located directly adjacent to the Application Site to the west. The impacts arising from this quarry are considered to have been adequately encompassed and accounted for within the assessment of baseline conditions and impact assessment sections of the various technical assessments which form part of the rEIAR.

In the Noise Section of this rEIAR for example, the background noise monitoring results includes noise emanating from surrounding land uses, including the adjacent quarry. These background noise levels have been used to identify the background noise environment upon which the CadnaA noise models are based.

Similarly, the Air Quality Section of this rEIAR considers dust deposition monitoring results includes dust generating activities coming from surrounding land uses, including the adjacent quarry.

Furthermore, the LVIA considers the landscape and visual impacts of both quarries. As such, the assessment therefore accounts for the cumulative impacts of surrounding development and operations over the assessment period concurrently, including that at the adjacent quarry.

The rNIS has considered permitted and/or built/existing developments that occur along the same hydrological connection linking the quarry with the River Boyne and River Blackwater SAC. While most planning

proposals pertain to the erection or extension of dwellings and farm buildings, some pertain to larger scale developments, such as the erection of warehouses or upgrades to the existing water treatment plant at Trim, Co. Meath. The latter of these applications occurs in close proximity to the River Boyne and River Blackwater SAC and includes the construction of new buildings and configuration of the existing water treatment building.

A search was also performed for known quarries within the locality, to include the following:

- Kilsaran's at Tromman
- Farrelly's at Castletown
- Fitzsimon's at Rathmolyon
- Dixson's at Tobertynan
- Des Keegan & Sons Ltd at Cloncowan
- Roadstone Trim at Bray Hill, Stokestown just south of Trim

The rNIS concludes that:

"Taking into account the best available scientific knowledge, applying the precautionary principle, and considering the conservation objectives of the relevant European Sites, it is concluded that the three quarry proposals, whether on their own ***or in conjunction with other plans or projects****, do not pose or have not posed an adverse impact on the integrity of any European Site".*

No significant cumulative impacts have been identified in any of the assessments and therefore it is considered that the development in combination with the existing quarry to the west of the Site and other development projects in the surrounding area, has not, is not and is not reasonably expected to result in any significant cumulative effects upon the environment.