CONTENTS

INTRODUCTION

Background

6.1 This chapter of the Environmental Impact Assessment Report (EIAR) provides a description of the existing land, soils and geological setting at the regional and local scale, an assessment of the impact of the proposed development on the land, soils and geological features of the area around the quarry at Rathcore and also other geological aspects of the proposed development.

6.2 Rathcore Quarry is located about 1 kilometre southwest of the village of Rathcore, and c. 3 kilometres northwest of the town of Enfield, Co. Meath.

6.3 The current quarry consists of an existing quarry void within a small hill. Next to the main entrance, there are ancillary buildings including an office, weighbridge, canteen, service shed, truck washing facility, and storage tanks.

6.4 North of the office and canteen area lies the primary processing and screening facility for quarry stone. This facility includes equipment like a generator, conveyor belts, crushing machinery, and a screening house. Adjacent to this, is an area for storing processed quarry materials of different sizes.

6.5 The extraction area of the quarry is south of the processing plant and storage area. It's mostly rectangular and extends in a north-south direction. The quarry is operated in two benches, progressing southward to approximately 90 meters AOD and 75 meters AOD respectively. The permitted quarry floor level is 75 meters AOD, as approved by planning permission P. Ref. 01/1018.

6.6 The quarry operations involve blasting to extract limestone. The fragmented rock is then crushed and screened to create aggregates for road construction, site development, concrete, asphalt, and agricultural lime production. Explosives are used to extract rock from the quarry face, and mobile crushing and screening units process the rock within the quarry void. Dump trucks transport the processed rock from the face to the fixed processing plant nearby.

6.7 The quarry faces are continuously moving southward within the confines of the approved quarry area. The existing quarry boundaries align with the authorized planning limits illustrated in **Figure 2-1**.

6.8 The excess material covering the quarry's operational space has been methodically removed and gradually deposited in designated overburden storage sections situated to the northeast and east of the extraction area. Previous planning permits (95/1416 and 01/1018) outlined an overburden storage zone with an ultimate upper level around 125 meters above sea level (m AOD). Presently, the elevation in these overburden storage regions varies between approximately 120 and 125 meters AOD.

6.9 This planning application concerns:

- the continuation of use of the existing previously permitted quarry development;
- deepening of the overall extraction area within a footprint of c. 10.6 hectares by two benches (15m each) to a final depth of c. 45 mOD from the current quarry floor level of c. 75 mOD;
- replacement of the existing primary wastewater treatment system with new wastewater treatment system and constructed percolation area; and
- provision of a new rock milling plant to be located on the existing quarry floor at the 75m AOD level.

6.10 The existing development and the activities undertaken at the site are described in detail in Chapter 2 of this EIAR.

6.11 The key aspects of the proposed development which relate to Land, Soils and Geology are:

- any additionally striped soils will be stored on-site and used in the final restoration of the site;
- bedrock extracted material will be used for production of construction aggregates and agricultural lime products; and
- the land will be restored to a natural habitat area including lake and beneficial biodiversity.

Scope of Work / EIA Scoping

6.12 This EIAR chapter is based on a desk study of the site / surrounding lands using published geological data, information from the existing quarry face exposures, groundwater and geological borehole logs and a resource assessment previously carried out by SLR.

Consultations / Consultees

6.13 Consultations were undertaken with Meath Co. Council in the preparation of this EIAR and a formal pre-planning consultation (ref. P.P. 8123) was held via Teams between planning, environment and transport staff of Meath County Council and representatives of Kilsaran, SLR Consulting and Hydro Environmental on 15 September 2023.

6.14 St. Gorman's Well is a designated County Geological Heritage site and therefore the Geological Survey of Ireland (GSI) were consulted as the competent authority for such designations. Details of the consultation and response are provided in **Appendix 6-A**.

6.15 Following a review of published development plans and the site survey, it was considered that there was no requirement for a separate formal consultation to be carried out regarding the potential land, soils and geology impacts of the proposed development.

6.16 A number of sources of information were consulted in the preparation of this EIAR Chapter for Land, Soils and Geology. The sources of information consulted are outlined below.

Project Team

6.17 This EIAR chapter relating to Land, Soils and Geology was prepared by:

- Nikolina Bozinovic BSc, MSc; and
- Peter Glanville BA, MSc, EurGeol., PGeo.

Limitations / Difficulties Encountered

6.18 This EIAR has been prepared based on available desktop information, inspection of the existing quarry faces, groundwater and geology borehole logs, and professional experience.

6.19 No specific difficulties were encountered in the preparation of this chapter.

REGULATORY BACKGROUND

EU Directives

6.20 The following European Union (EU) Directive relate to Land, Soils and Geology at the site in this EIAR chapter:

- Environmental Impact Assessment Directive (2011/92/EU);
- Environmental Impact Assessment Directive (2014/52/EU);
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. 296 of 2018);
- The management of waste from extractive industries (2006/21/EC); and
- Environmental Liability Directive (2004/35/EC).

6.21 The EU EIA Directive regulates the environmental impact assessment process and the information in this EIAR. The Management of Waste Directive and the Environmental Liability Directive will regulate the activities at the site.

Irish Legislation

6.22 The following legislation relating to Land, Soils and Geology at the site in this EIAR:

- No. 349 of 1989, European Communities (Environmental Impact Assessment) Regulations, and subsequent amendments (S.I. No. 84 of 1994, S.I. No. 352 of 1998, S.I. No.; 93 of 1999, S.I. No. 450 of 2000 and S.I. No. 538 of 2001);
- S.I. No. 473 of 2011, European Union (Environmental Impact Assessment and Habitats) Regulations 2011;
- S.I. No. 584 of 2011, European Union (Environmental Impact Assessment and Habitats) (No.2) Regulations 2011;
- The Planning and Development Acts, 2000 as amended; and
- The Planning and Development (Amendment) Act 2010, S.I. 600 of 2001 Planning and Development Regulations and subsequent amendments including, S.I. No. 364 of 2005 and S.I. 685 of 2006.

6.23 The above legislation regulates the information contained in an EIAR and planning at the site.

Planning Policy and Development Control

6.24 The Meath County Development Plan (CDP) 2021-2027 sets out conservation objectives in relation to soils, geology, geomorphology and geological heritage in the County.

Guidelines

6.25 This Land, Soils and Geology chapter of this EIAR has been prepared with regard to the following guidelines:

- Environmental Protection Agency (2022) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports.* Environmental Protection Agency, Johnstown Castle Estate, Co. Wexford.

- DoEHLG (2010) Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities;
- Environmental Protection Agency (2002) Guidelines on the information to be contained in Environmental Impact Statements;
- Environmental Protection Agency (2003) Advice Notes on current practice (in the preparation of Environmental Impact Statements);
- Geological Survey of Ireland, Irish Concrete Federation (2008) Geological Heritage Guidelines for the Extractive Industry;
- Institute of Geologists of Ireland (2013) Guidelines for the preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements;
- National Roads Authority (2008) Environmental Impact Assessment of National Road Schemes - A Practical Guide;
- National Roads Authority (2008) Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes.
- National Roads Authority (2006) A Guide to Landscape Treatments for National Road Schemes in Ireland; and
- Transport Infrastructure Ireland (March 2013). Specification for Road Works Series 600 – Earthworks.
- Good Practice Guide for Handling of Soils (UK Ministry of Agriculture, Fisheries and Food, 2000).

RECEIVING ENVIRONMENT

Study Area

6.26 For the purposes of this assessment, the study area comprises the application site and the surrounding area up to c.2 km reflect the sensitivity of the Land, Soil and Geology; this is in line with the Institute of Geologists of Ireland's (IGI) guidelines (2013).

6.27 The IGI guidelines state that the minimum distance of 2 km should be reviewed in the context of the geological environment as well as the scale of development and increased to reflect the sensitivity of the subsurface. The IGI guidelines also state that maps should be sourced to allow for the review of the geological conditions that exist within a minimum of 2 km of the site boundary and presented at a scale of 1:25,000.

6.28 The baseline maps produced in this EIAR are at a scale of 1:25,000 and include an area up to c. 2 km from the lands under the control of the applicant.

Baseline Study Methodology

6.29 The baseline study undertaken for Land, Soils and Geology, here involves a review of published geological data, information from the existing quarry face exposures, groundwater and geological borehole logs and a resource assessment previously carried out by SLR.

6.30 This section describes the receiving environment at and in the immediate vicinity of the site using the available baseline information gathered, specifically the:

- **Context** of the receiving environment - location/ magnitude/ spatial extent and trends of the environmental factors;

- **Character** of the receiving environment - distinguishing aspects of the environment being considered here;
- **Significance** of the receiving environment - the quality, value or designation is assigned to the existing environment; and
- **Sensitivity** of the receiving environment - how sensitive is the aspect of the environment to change.

6.31 The baseline study is a qualitative assessment of the available information based on professional experience and interpretation of the available data.

Sources of Information

6.32 A former EIAR from 2016 was examined on this occasion, together with regional sources of information, summarised in the following **Table 6-1**.

Table 6-1:
Regional Data Sources

Data	Dataset
Soils	• Irish Soils Information System - Teagasc
Subsoil Geology	• Teagasc/GSI/EPA Subsoil Mapping
Bedrock Geology	• GSI Data Viewer - Bedrock Geology
Protected Areas, Environmental Pressures	• Environmental Protection Agency, • Irish Geological Heritage Programme (www.gsi.ie); • National Parks and Wildlife Service

6.33 A number of site investigations have been carried out on the site from 1998 to 2014, these works included the following:

- six rotary core boreholes (1998);
- 14 no. DTH drill boreholes (2002);
- six rotary core boreholes (2000/2001); and
- two boreholes totalling 80 m drilled in the south-eastern part of the quarry (2014).

6.34 Between 2019 and 2022 David Ball completed inspections of the bedrock exposed in the quarry walls and floor at Rathcore with John Paul (JP) Moore, a structural geologist carrying out research in UCD under iCRAG, they undertook a number of investigations at the quarry including:

- 52 no. exploratory BHs were drilled at Rathcore under the direction of David Ball and J. P. Moore to explore structural geology targets identified from a structural analysis of the features identified in the quarry by MK Drilling Ltd. in 2019; and
- Three wide diameter BHs were drilled on structural targets identified during the exploration drilling in Rathcore Quarry under the direction of David Ball by Patrick Briody and Sons in 2019).

6.35 The existing quarry exposures at the site provide an indication of the local geology at the site.

Land Baseline

6.36 Within the EIA EU Directive (2014/52/EU) Land is recognised as a 'natural resource' and the Directive also refers to the importance of the sustainable use of soil and the need to address the unsustainable increase in settlement areas over time ('land take'). Therefore, the issues of land as both a natural resource and land take must be considered in an assessment.

6.37 The introduction section to the EU Directive (2014/52/EU) notes that the:

'final document of the United Nations Conference on Sustainable Development held in Rio de Janeiro on 20-22 June 2012, which recognises the economic and social significance of good land management, including soil, and the need for urgent action to reverse land degradation. Public and private projects should therefore consider and limit their impact on land, particularly as regards land take, and on soil, including as regards organic matter, erosion, compaction and sealing; appropriate land use plans and policies at national, regional and local level are also relevant in this regard'.

6.38 Land can be considered to be a resource with a beneficial use to society, for example agricultural land use, extractive industry land use or urban residential land use; unnecessary land take may result in the loss of this resource which has the potential to have adverse social and economic consequences for society.

6.39 The Meath County Development Plan (2021-2027) sets its main objectives which relate to soils and geology, land use and extractive industries in the County.

- **Objective HER POL 46**: To maintain the geological and geomorphological heritage values of County Geological Sites listed in Table 8.7 and, through consultation with the Geological Survey of Ireland, protect them from inappropriate development.
- **Objective DM POL 22:** To encourage the rehabilitation of disused pits and quarries to productive agricultural use where appropriate having regard to all appropriate environmental considerations.
- **Objective DM OBJ 63:** Where possible, sites shall be subject to rehabilitation and landscaping programmes in tandem with the various phases of extraction. Possible uses post closure could include agriculture and recreation/amenities.

6.40 The proposed future extraction will be predominantly within the existing footprint of the quarry at depth.

6.41 The Meath County Development Plan (2021-2027) recognises the importance of the extractive industry and refers to the need to promote a reasonable balance between conservation and development.

6.42 In terms of land take, the proposed development will result in a loss of the in-situ limestone resource at this location. The soils at the proposed deepening area are stripped and stored on site during the extraction of the limestone, before being replaced following extraction as part of the restoration operations; this will result in a land take for agricultural land use during the operational extraction life at the site.

6.43 In terms of land take, the proposed development will result in a loss of the limestone resource within the proposed extraction area at this location. The remaining soils within the final quarry footprint area will be stripped and stored on site during the extraction of the rock material, before being replaced following extraction as part of the overall site restoration operations; this will result in a land take for vegetation land use during the operational extraction life at the site. All the topsoil stripped from within the final quarry footprint area will be stored on site and used in site restoration works.

6.44 Restoration works are proposed to be carried out on permanent completion of the extraction operations which will include return of overall application site to a natural habitat including lake, which is one of the beneficial after uses listed in the EPA Guidelines: 'Environmental Management in the Extractive Industry' (2006).

Corine Land Cover

6.45 The Corine land cover mapping is a standardised inventory of land cover across Europe which is split into 44 different land cover classes. The latest 2018 Corine land cover mapping for Ireland is based on the interpretation of satellite imagery and national in-situ vector data. Land cover is mapped to the standard CORINE classification system and data specifications.

6.46 The Corine land cover mapping reflects land use at the time of survey, in this case the latest available land cover data for Ireland is 2018. The Corine Land cover classes at the site and in the wider area around the site are classified as principally agricultural land cover comprising agricultural pasture and arable land with residential land cover in Enfield Town.

Soils Baseline

6.47 Soil is defined as the top layer of the earth's crust and is formed by mineral particles, organic matter, water, air and living organisms. Soil is an extremely complex, variable and living medium and its characteristics are a function of parent subsoil or bedrock materials, climate, relief and the actions of living organisms over time.

6.48 Soil formation is an extremely slow process and can take thousands of years to evolve; soil can be considered essentially as a non-renewable resource.

6.49 As the interface between the earth, the air and the water, soil performs many vital functions; it supports food and other biomass production (forestry, biofuels etc.) by providing anchorage for vegetation and storing water and nutrients long enough for plants to absorb them. Soil also stores, filters and transforms other substances, including carbon and nitrogen, and has a role supporting habitats serving as a platform for human activity.

National Soils

6.50 The Irish Soil Information System (ISIS) project was undertaken by the EPA and Teagasc and has gathered together existing information and data from soil survey work in Ireland, which has been augmented it with a new field data, leading to the production of a new national soil map at a scale of 1:250,000 (www.teagasc.ie/soils).

6.51 The ISIS project has identified a number of Soil Associations across Ireland, which are each comprised of a range of soil types (or '*Series*'), each of them different in properties, with different environmental and agronomic responses. For each soil type, the properties have been recorded in a database maintained by Teagasc.

6.52 The soil association at the site is classified as the Elton Series (ISIS Code 1000a), which is a fine loamy drift with limestone cobbles. A small area of River alluvium (05NRIV) lies further to the west with the Mylerstown Series (0650a) lying further to the south, described similarly as fine loamy drift with limestone cobbles.

6.53 The Elton Series is described as comprising sand silt and clay with limestone stones and is generally considered to be moderately draining.

Site Soils

6.54 The Teagasc soil mapping for the Irish Forestry Soils (IFS) mapping project, indicates that the soils underlying the southern portion of the site comprise typical grey, brown podzolics and brown earths derived from mainly calcareous parent material, see **Figure 6-1**.

6.55 The northern part of the site containing the processing/storage yard is underlain by renzinas and lithosols with the parent material being Carboniferous limestone sands and gravels.

6.56 The majority of soils at the site have previously been removed to allow for the extraction of rock and development of processing plant. Removal of soils is only required in localised areas of the northwest (existing treeline ridge) and northeast parts of the extraction area, as shown on **Figure 2-1** in Chapter 2 to facilitate the proposed extraction design at depth.

Subsoils Baseline

Regional Subsoils

6.57 The Quaternary (Subsoil) deposits were deposited during the last 2 million years, and essentially comprise the unconsolidated materials overlying bedrock. The two predominant types of quaternary subsoils in Ireland are glacial till, deposited at the base of ice sheets, and sand & gravel deposits, associated with the melting of the ice sheets and are generally termed 'glaciofluvial outwash sands and gravels'. Other extensive Quaternary subsoils in Ireland include peat, river alluvium and coastal process deposits. Most Quaternary subsoils in Ireland were deposited after the maximum of the last glaciation, the Midlandian, which occurred approximately 17,000 years ago.

6.58 The subsoils across Ireland have been mapped on a national basis by Teagasc as part of the EPA Soil and Subsoil Mapping Project for the Irish Forestry Soils (IFS) project – refer to **Figure 6-2**. The subsoil mapping was undertaken at a national basis using existing Quaternary Geology maps, publications, remote sensing and field mapping and sampling.

6.59 The thickness of superficial deposits varies over the site from 2m to 13m. The subsoils within the extraction area have in most areas already been removed with the exception of the northeast and northwest corners, see **Figure 2-1**. Where subsoils occur in the immediate vicinity of the proposed extraction area they are composed of tills derived from limestones, see **Figure 6-2**.

Bedrock Geology Baseline

Regional Setting

6.60 The GSI 1:100,000 geology map Sheet 13 shows the existing northwest section of Rathcore Quarry lies within the outcrop area of Waulsortian Limestone informally referred to as "The Reef", which is a massive bedded, pale grey, fossiliferous fine grained limestone composed of fine lime muds, and the southeast section within the Lucan Formation, see **Figure 6-3**. Waulsortian is typically overlain by thin, variable thicknesses of the Tober Colleen Formation, a black calcareous mudstone that is in turn overlain by fine-grained, dark grey to black, well bedded limestones of the Lucan Formation, informally known as Calp. The bedrock geology map in **Figure 6-3** shows the Lucan Formation directly overlying the Waulsortian with a contact between the Waulsortian and the Lucan Formation, which is intersecting the application area in a northeast to southwest direction.

6.61 The Waulsortian Limestones are composed of massive bedded banks of very pure carbonate muds with variable calcite cements. The banks are frequently overlain by well-bedded carbonate muds or crinoidal grainstones with thin shales between the limestone beds.

6.62 The Waulsortian banks have a marked depositional topography that is well demonstrated in Rathcore Quarry, where dips vary significantly in both degree and direction. The contact between the Waulsortian Limestones and the overlying overburden is generally simple with thin glacial overburden overlying a gently undulating upper Waulsortian surface. There is an exception at the eastern face of the quarry where an irregular topography with variable thickness of post-Waulsortian overburden is present at the Waulsortian-overburden contact.

Table 6-2
Geological Sequence in the Rathcore Quarry Area

Formation	Thickness	Description
Lucan Formation	1000m+	Dark fine grained limestone and dark shales
Waulsortian Limestone Formation	200m – 500m Base not Seen	Pale-grey micritic sparry limestone with very high calcite content
Allenwood Formation	Up to 400m	Thick-bedded limestone, locally peloidal

Local Detail

6.63 A detailed hydrogeological study of the site and the nearby St. Gorman's Well (a local spring well of significant hydrogeological importance) was commissioned by Kilsaran and carried out by David Ball over the period 2019-2022. The detailed study was commissioned following An Bord Pleanála's refusal of an application to deepen Rathcore quarry in 2016. The reasons for the refusal related to the hydrogeology of the quarry and the potential of the development to impact St. Gorman's Well, a warm spring, located c. 1.6km to the west. The resulting Hydrogeological Investigation Report is a significant body of work and presents a very detailed assessment which relies both on historic geological/hydrogeological data as well recent hydrogeological investigations. The findings from the study are outlined in Chapter 7 of this EIAR and specifically the full Hydrogeological Assessment Report is provided in EIAR Chapter 7, **Appendix 7-A**.

6.64 The hydrogeological investigation at the quarry site and surrounding area included 55 boreholes to define the geology as the basis of the hydrogeological investigation for St. Gorman's Well, see EIAR **Chapter 7**.

6.65 A detailed study of the bedrock geology of both Rathcore Quarry and the surrounding area is presented in the Hydrogeological Assessment Report, and the findings indicate that the bedrock geology is far more complex than previously understood and that the published GSI's regional bedrock geology map (1:100,000) is a simplification of the geology of the local area.

6.66 As noted above, detailed and extensive geological investigations at the site were undertaken between 2019-2022 as part of the Hydrogeological Assessment carried out by David Ball and included:

- Inspection of the rock faces at Rathcore Quarry;
- Drilling of 52 no. exploratory boreholes at Rathcore Quarry in order to identify structural lineaments which may give rise to karst conduits;
- Drilling and installation of 3 no. wide diameter boreholes which tap into significant water-bearing geological structures identified during the exploratory drilling; and
- Correlation of borehole logs with geophysical data obtained from Tellus airborne surveys.

6.67 The data obtained from the historic and recent site investigations form part of a detailed and extensive geological dataset for the local area. Based on the site specific geological data, it has been concluded that the bedrock geology of the local area is divided into upward, downward, and sideways, juxtaposed blocks of different limestones separated by Carboniferous and Cenozoic age faults.

6.68 The geological information indicates that the Rathcore Quarry is underlain entirely by Waulsortian Limestones. In contrast to the GSI's map, the Lucan Formation is not present at Rathcore Quarry.

6.69 The Waulsortian Limestones at Rathcore are highly karstified, with drilling at the quarry encountering an open underground cavity system. The cavities were found to contain clay with variable water flows. In between the cavities, the limestone rock is solid. The rock in the south of the quarry contains less solutionally enlarged faults. Structural features have played a key role in the development of karst conduits with the younger Cenozoic faults more likely to be karstified than the Carboniferous structures which have largely been closed by subsequent tectonic stresses. Correlation of drilling logs with (Tellus) geophysical surveys have revealed that the Waulsortian Limestones are highly karstified not just at Rathcore but also throughout the local area.

Karstification

6.70 The results from the boreholes conducted at the site for the Hydrogeological Assessment indicate that the Waulsortian Limestones at Rathcore are highly karstified, with an open underground cavity system at the site. The cavities were found to contain clay with variable groundwater flows through them.

6.71 The hydrogeological data obtained during pumping tests at the site for the Hydrogeological Assessment indicates that there is a complex but extensive and interconnected system of karst conduits in the underlying Waulsortian Limestones at the site.

6.72 The correlation of drilling logs with (Tellus) geophysical surveys have revealed that the Waulsortian Limestones are highly karstified not just at Rathcore but also throughout the local area.

Geological Heritage Baseline

6.73 The Geological Survey of Ireland (GSI) Irish Geological Heritage (IGH) Programme of audited sites was reviewed (www.gsi.ie) to establish if any geological heritage issues were present in relation to the quarry development. There are currently 28 County Geological Sites in the current Meath County Development Plan.

6.74 The Rathmoylan Esker is a segment of complex beaded esker approximately 4.8km northeast of Rathcore Quarry. It is comprised of a remnant face in a former sand & gravel quarry directly northeast of a sports ground in Rathmolyon village. It is listed as a County Geological Site in Meath under IGH 7 (Quaternary).

6.75 At Ballynakill, approximately 1.6km west from Rathcore Quarry, there is a warm spring, referred to as St. Gorman's Well. This spring is recorded as a karstic feature on the GSI web map viewer. The spring, an expansive warm spring engulfs an approximate area of 40 square meters when discharge levels peak. Temperature fluctuations, ranging from 12°C to 25°C, are contingent upon prevailing climatic conditions and seasonal shifts. On occasion, this spring spills into an adjoining waterlogged area before being directed into a nearby ditch drainage system. The underlay predominantly consists of substantial limestone fragments and gravel. Referred to as St. Gorman's well, it displays a seasonal flow pattern.

6.76 The geological setting of the St. Gorman's Well is discussed in detail in Chapter 7 of this EIAR and is specifically addressed in great detail in **Appendix 7-A** which contains the full Hydrogeological Report detailing the assessment carried out from 2019-2022.

6.77 The site is recorded as a designated County Geological Status by the Geological Survey of Ireland, under MH028 code, and is listed in Meath County Development Plan (2021-2027).

6.78 A consultation submission was made to the GSI in November 2023 in relation to St Gorman's Well designated County Geological Site included under IGH Theme 16 (Hydrogeology) given the sites proximity to the application site.

6.79 The consultation submission and the GSI response are both provided in **Appendix 6-A**. The GSI response was to confirm that, at moment the GSI have no further comment to add with regards the proposed development and the designated County Geological Site.

6.80 There are no other sites designated of County Geological Interest within, or immediately adjacent to the quarry indicated in the Meath County Development Plan (2021-2027).

Sensitive Receptors

6.81 In terms of land, soils and geology baseline considered here, the sensitive receptors identified from this baseline is the bedrock and St. Gorman's Spring geological heritage site.

6.82 The identified limestone bedrock is of aquifer value, as well as of economic importance. St. Gorman's Spring is designated as a County Geological Heritage site.

IMPACT ASSESSMENT

Evaluation Methodology

6.83 The evaluation of impacts of the proposed development is based on a methodology similar to that outlined in the:

- '*Guidelines for the Assessment of Geology, Hydrology and Hydrogeology for National Road Schemes' published by the National Roads Authority* (2009); and
- '*Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements published by the IGI (2013).*

Evaluation of Impacts

6.84 This assessment therefore will focus on the potential impact of the proposed development on the land, soils and geology at the site.

6.85 The status and importance of existing land, soil and geology attributes identified at the application site is assessed in **Table 6-3** below.

Table 6-3
Status and Importance Land, Soil & Geology Attributes

Attribute	Status / Occurrence	Importance
Land	The land at the proposed development is currently used for quarrying.	Quarrying is considered to have a high economic importance at the local and regional level.
Soils	The soils at the site have previously been stripped over the majority of the site to allow for quarrying and related processing, manufacturing and storage activities.	High at a local level.
Subsoils	The subsoils at the site have previously been stripped to allow for quarrying.	High at a local level.
Geology	The bedrock at the site does not have any designated status.	In terms of the proposed development, the bedrock geology is of High economic importance at the local and regional level. The Waulsortian Limestone is also recognised as a top quality agricultural lime, which regulate soil pH and improve nutrient availability to plants giving more efficient fertilizer application.
Geological Heritage	St. Gorman's Spring, c.1.6km to the west, is a County Geological Site. Rathmoylan Esker c.4.8km to the northeast, is a Geological Heritage Site.	The St. Gorman's Spring is deemed to have high heritage importance on a regional level. This spring is considered a very important example of the warm spring province of the Kildare-Meath border area in northwest Leinster. As it is one of the highest temperature warm springs, well studied and the least disturbed in the Leinster province, and probably in the whole of Ireland, it is to be proposed as an NHA. The exposed Rathmoylan Esker was one of the type sites for esker bed formation.

6.86 The magnitude of these impacts on the land, soils and geology attributes is assessed in **Table 6-4** below.

Table 6-4
Magnitude of Potential Impacts on Land, Soil and Geology (with No Mitigation)

Attribute	Impact of Proposal on Land, Soil and Geology	Magnitude of Potential Impact (with No Mitigation)
Land	Continued use and deepening of the existing quarry void.	Minor impact as the site is an existing quarry with associated ancillary operation.
Soils	No impact	Negligible impact as the soils at the site have already been stripped from the majority of the extraction area to allow for the existing rock extraction.
Subsoils	No impact	Negligible impact as the subsoils have already been stripped from the majority of the extraction area to allow for rock extraction.
Geology	Permanent loss of bedrock	Permanent loss of resource locally within the extraction area which will be used in the local and regional

		construction industry and as an agricultural beneficial additive.
Geological Heritage	No impact on existing heritage site.	No impact due to distance of St. Gorman's Spring and Rathmolyon site from Rathcore quarry.

Indirect Impacts

6.87 There will be no indirect impacts on land, soils or geology as a result of the continued use and deepening of the existing quarry at the site.

Unplanned Events (i.e. Accidents)

6.88 Unplanned events within the application site, such as accidents, have the potential to impact on the land, soils and geology adjoining the site.

6.89 Ground instability, particularly the long-term stability of quarry faces and settlement lagoons, have the potential to impact on adjoining lands. Operations at the quarry will adhere to the Health and Safety Authority Safe Quarry Guidelines in relation to the Safety Health and Welfare at Work (Quarries) Regulations 2008 and this will limit the potential for unplanned events such as instability of any faces or instability in adjacent lands.

6.90 With the implementation of the Quarry Regulations 2008, it is considered unlikely that instability of quarry faces would result in an impact on the land, soils and geology at the site.

Human Health

6.91 From a land, soils and geology perspective, any potential impacts on human health from the excavation and processing of the limestones at the site would not be via the land use, soils and geology pathways but via other pathways such as air and water, which are addressed in the relevant chapters of this EIAR.

Cumulative Impacts

6.92 New quarry faces associated with the extension (deepening) will have a positive cumulative impact as there will be additional geological exposures for investigation and which will contribute to the knowledge and understanding of the geology.

Interaction with Other Impacts

6.93 No interactions with other impacts have been identified for the land, soils or geology attributes associated with the proposed development. The interaction between soils / geology and water is addressed in Chapter 7 Water (Hydrology & Hydrogeology).

'Do-nothing Scenario'

6.94 Under the 'do nothing scenario' the existing quarry void will remain and there will be an adverse impact with the permanent loss of agricultural land and agricultural soils at the site, as is already the case.

MITIGATION MEASURES

6.95 Mitigation measures are outlined here for the proposed continued use and deepening of the existing quarry.

Construction Stage

6.96 In the context of the proposed quarry development, the construction stage is taken to be the preparation of the proposed deepening by the stripping of any remaining soils and subsoils overlying the final extraction footprint. The existing quarry is already in operation; therefore, the majority of the soils and subsoils have been previously removed.

6.97 Soils will be managed on-site in line with best practice national guidelines (National Roads Authority, 2006) and Specification for Road Works Series 600 – Earthworks (Transport Infrastructure Ireland, March 2013).

6.98 All stripped soil will remain on site and be stored in the designated overburden storage area.

Geological Heritage

6.99 There will be no impact on geological heritage during construction due to the distance of the geological heritage sites from the quarry.

Operational Stage

6.100 During the operation stage the bedrock materials will be excavated and processed at the site.

6.101 Mitigation measures outlined above for the Construction Stage will continue to be implemented throughout the Operational Stage where appropriate and required.

6.102 Operations at the site will adhere to the Health and Safety Authority Safe Quarry Guidelines in relation to the Safety Health and Welfare at Work (Quarries) Regulations 2008 and this will limit the potential for unplanned events such as instability of pit faces or instability in adjacent lands.

6.103 No other specific mitigation measures are required at the site in terms of land, soil and geology at this stage.

6.104 Kilsaran will facilitate access to the quarry by GSI staff in order to inspect the geology at Rathcore quarry if required.

RESIDUAL IMPACT ASSESSMENT

6.105 The residual impacts on land, soil and geology are those impacts which remain following the implementation of the mitigation measures outlined above.

Construction Stage

6.106 There are no residual impacts associated with this stage of the development, other than those outlined in the Operational Stage, below.

Operational Stage

6.107 With the restoration of the site to a natural habitat land use, including lake, the long-term impact of the loss of the agricultural land (from the original quarry development) is considered to be low to imperceptible.

6.108 The soils at the site will be reused at the site for restoration. With this mitigation measure in place it is considered that the residual impact on soils will be low to imperceptible.

6.109 The operation of the quarry will be in line with the Health and Safety Authority Safe Quarry Guidelines in relation to the Safety Health and Welfare at Work (Quarries) Regulations 2008 and will limit the potential for unplanned events such as instability of quarry face or instability in adjacent lands. Therefore, it is considered that the residual impact of the proposed development on land stability will be low to imperceptible.

MONITORING

6.110 Following the final restoration of the quarry monitoring will be required over a period of three years to ensure that the restored soils and land use is successful and that the remaining quarry faces are stable.

REFERENCES

Creamer, R. & O'Sullivan , L., (2018) The Soils of Ireland

EPA Report No. 130 (2014), Irish Soil Information System Synthesis Report.

Irish Soil Information System, Teagasc (www.https://www.teagasc.ie/environment/soil/irish-soil-information-system/)**EPA (2008)**, Irish Soil Information System Final Technical Report 10.

Geological Survey of Ireland (2007), 1:100,000 Bedrock Geology of Ireland (Digital-Map).

Geological Survey of Ireland Bedrock Geology Sheet 13 (1:100,000), Geology of Meath, and accompanying geological memoir (1995).

Institute of Geologists of Ireland (2013) 'Guidelines for the preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements'.

Meath County Development Plan 2021 - 2027

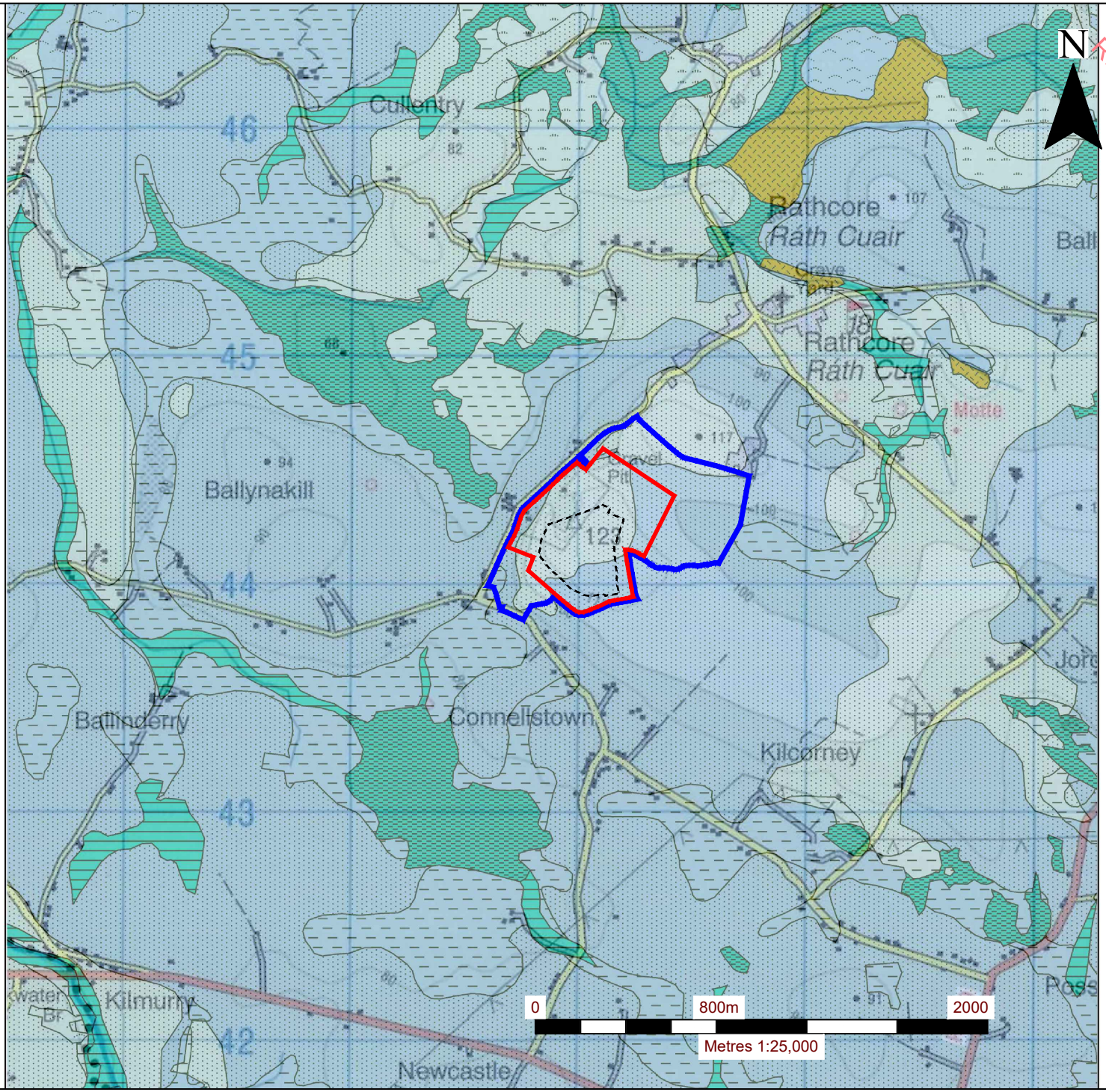
National Roads Authority (2006) A Guide to Landscape Treatments for National Road Schemes in Ireland

Teagasc, 2004, Ireland Subsoil Parent Materials Map (digital version).

Teagasc, 2007, Ireland Soils Map (digital version).

Transport Infrastructure Ireland (March 2013). Specification for Road Works Series 600 -Earthworks

FIGURES



NOTES

Extract from Ordnance Survey 2500 Scale Digital Mapping
3053-B, 2984-C, 3054-A

CYAL 50381397
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LEGEND

LANDHOLDING BOUNDARY (c.53.8 HA.)

APPLICATION AREA (c.31.1 HA.)

LIMIT OF EXCAVATION (c.10.6 HA.)

TEAGASC/EPA SOIL MAPPING
IFS SOIL TYPE

- Alluvium - Mineral
- Grey Brown Podzolics and Brown Earths
- Surface & Groundwater Gleys derived from calc. PM
- Renzinas and Lithosols
- Cutaway and Cutover Peat
- Lacustrine Sediments

Kilsaran
ideas taking shape

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KILSARAN CONCRETE UNLIMITED COMPANY
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

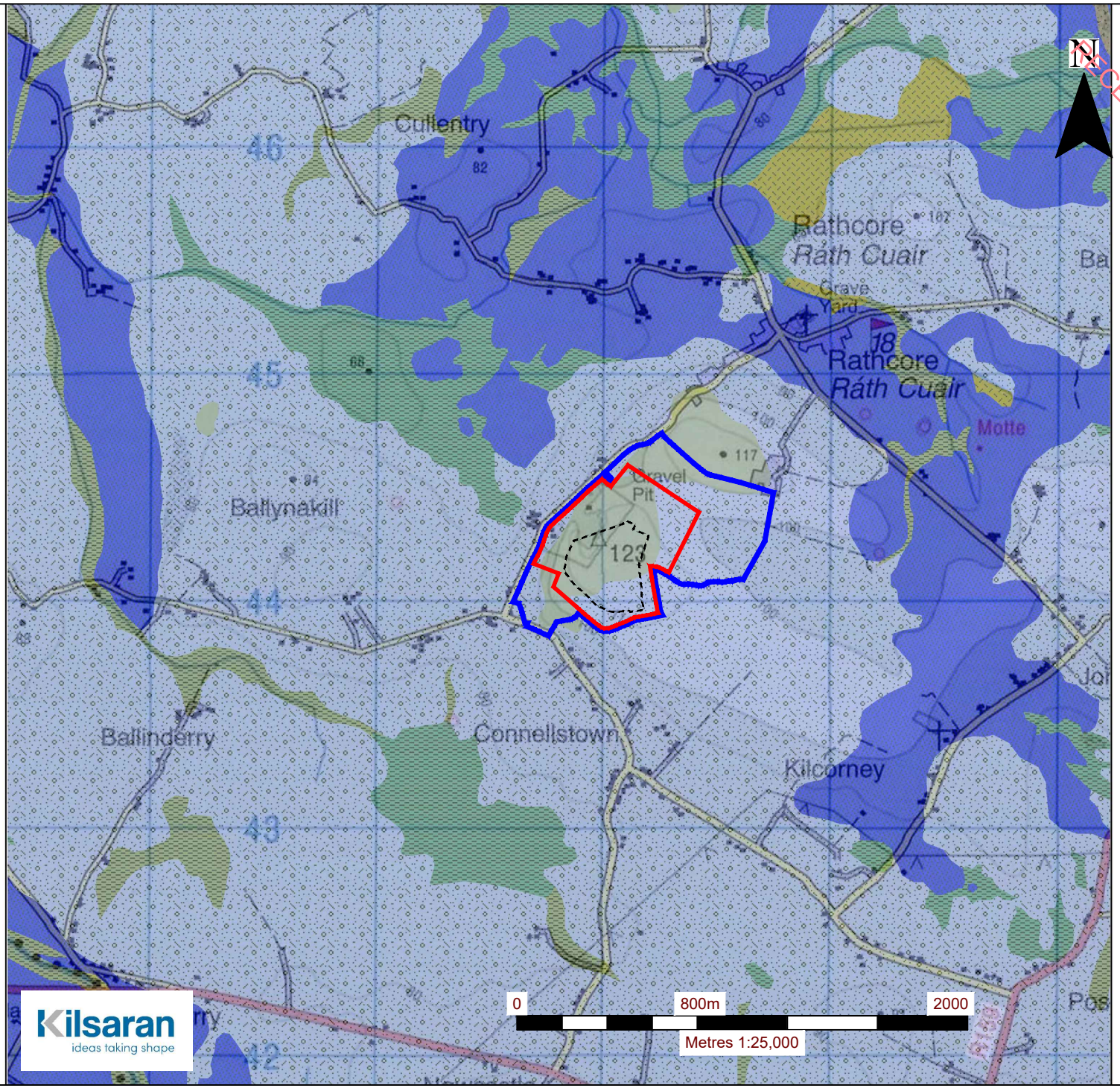
RATHCORE QUARRY
RATHCORE / CONNELLSTOWN TOWNLANDS
ENFIELD, CO. MEATH

REGIONAL SOILS MAP

FIGURE 6-1

Scale	Date
1:25,000 @ A4	FEBRUARY 2024

00036.064960.Rathcore EIAR-Fig6-1.Soils Map.dwg



NOTES

EXTRACT FROM TEAGASC SOILS MAPPING

CYAL 50381397

LEGEND

- LANDHOLDING BOUNDARY (c.53.8 HA.)
- APPLICATION AREA (c.31.1 HA.)
- AREA OF EXCAVATION (c.10.6 HA.)

IRELAND SUBSOILS
PARENT MATERIAL TYPE

- Alluvium
- Basic Esker Sands and Gravels
- Cutover Peat
- Sand and Gravel - Carboniferous Limestones
- Lacustrine Sediments Undifferentiated
- Till - Carboniferous Limestone Clasts

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ENVIRONMENTAL IMPACT ASSESSMENT REPORT

RATHCORE QUARRY
RATHCORE / CONNELLSTOWN TOWNLANDS
ENFIELD, CO. MEATH

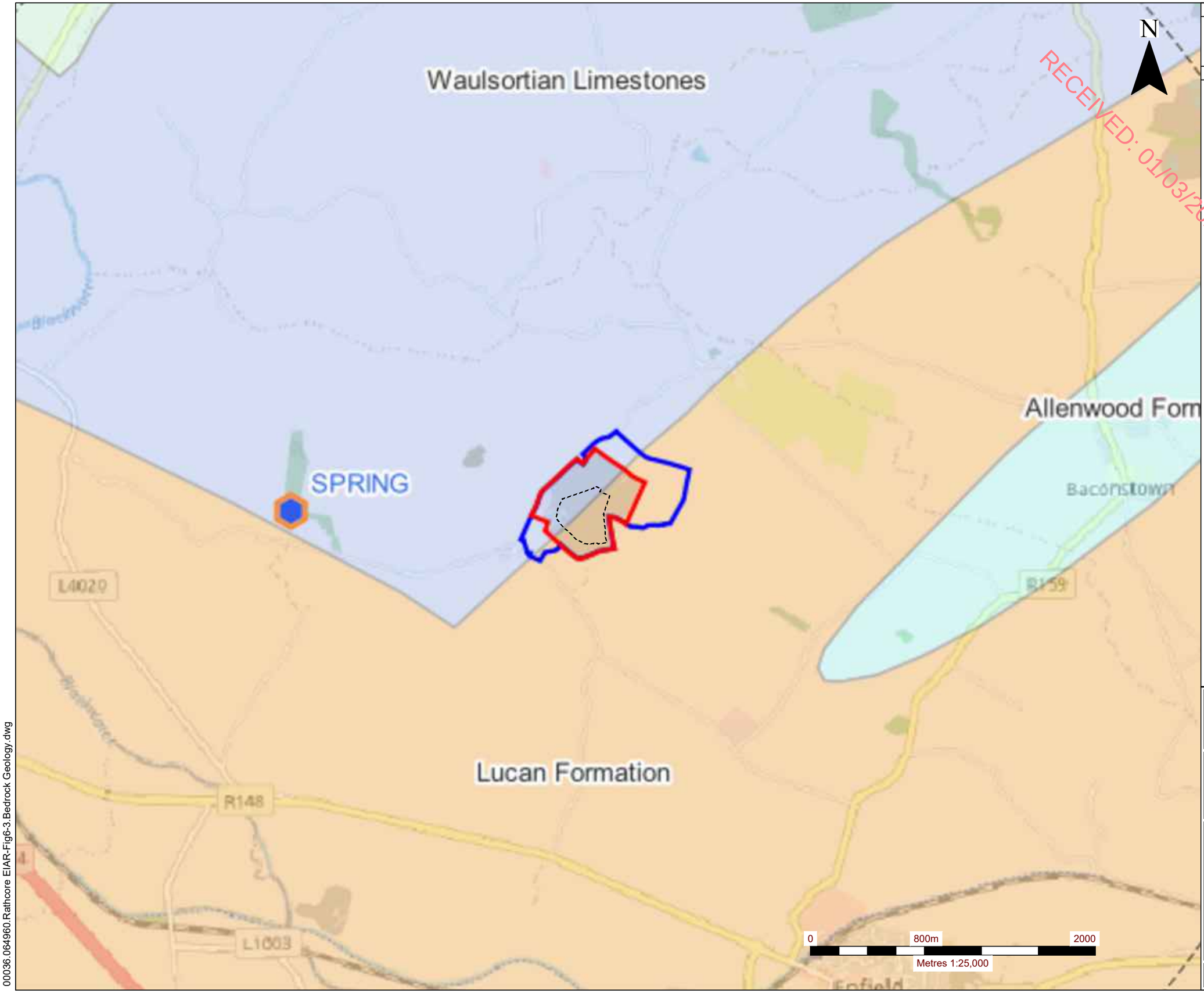
SUB-SOILS MAP

FIGURE 6-2

Scale: 1:25,000 @ A4

Date: FEBRUARY 2024

00036.064960.Rathcore EIAR-Fig6-2.Sub-Soils Map.dwg



RECEIVED: 01/03/2024

NOTES

EXTRACT FROM GSI DIGITAL MAPPING

CYAL 50381397
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LEGEND

- LANDHOLDING BOUNDARY (c.53.8 HA.)
- APPLICATION AREA (c.31.1 HA.)
- LIMIT OF EXCAVATION (c.10.6 HA.)

Kilsaran
ideas taking shape

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RATHCORE QUARRY
RATHCORE / CONNELLSTOWN TOWNLANDS
ENFIELD, CO. MEATH

BEDROCK GEOLOGY MAP

FIGURE 6-3

Scale: 1:25,000 @ A3

Date: FEBRUARY 2024

00036.064960.Rathcore EIAR-Fig6-3.Bedrock Geology.dwg

APPENDICES

Appendix 6-A
Geological Survey of Ireland (GSI) Consultation

SLR Environmental Consulting (Ireland) Ltd

9 November 2023

Clare Glanville
Geological Survey Ireland
Beggars Bush
Haddington Road
Dublin
D04 K7X4

gsiplanning@gsi.ie

501.064960.00001

Kilsaran Concrete Unlimited Company

RE: Consultation Submission for St Gorman's Well County Geological Site included under IGH Theme 16 (Hydrogeology)

GSI Site Code Ref. MH028

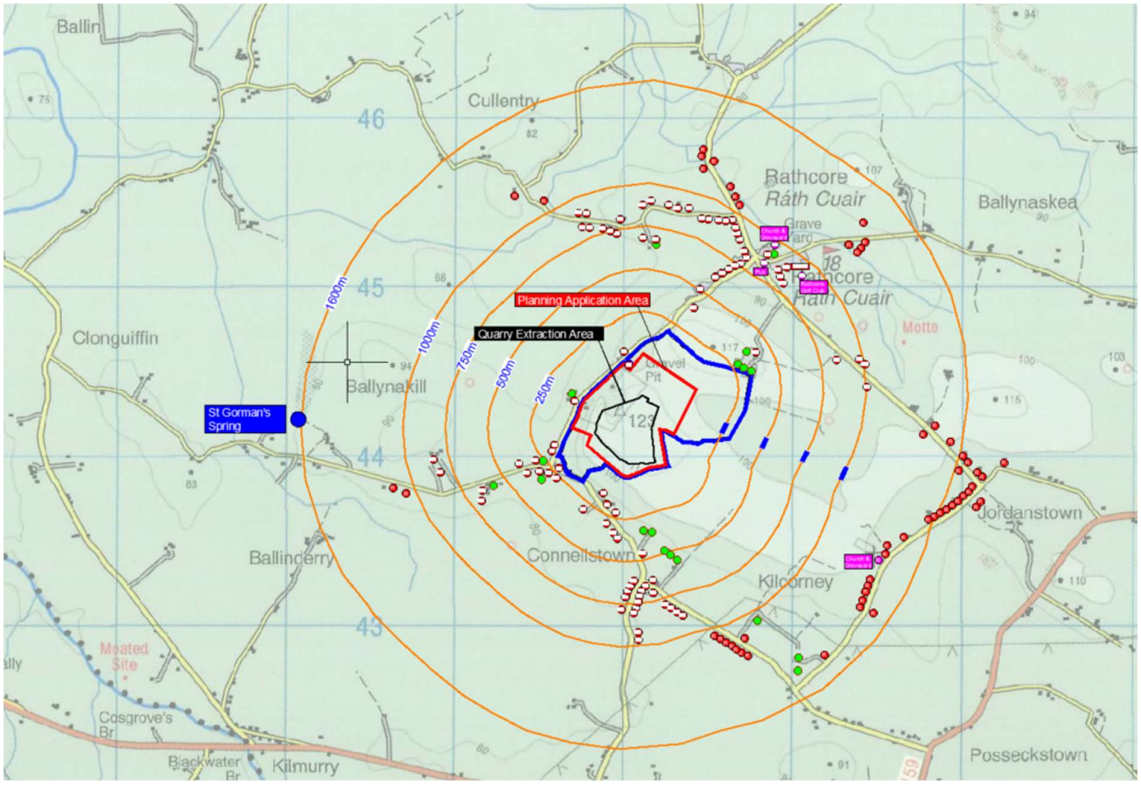
Dear Clare,

We are currently preparing a Planning Application and Environmental Impact Assessment Report (EIAR) for the existing Kilsaran quarry at Rathcore, Co. Meath. The application is for a small lateral extension and deepening of the existing quarry void. The development being applied for consists of:

- *Permission for continued use of the previously permitted developments under P. Reg. Ref. No's. 01/1018 (PL17.127391); 95/1416 (PL17.099325) and 91/970 (PL17.089787) to include the existing quarry, drilling, blasting, crushing and screening of rock and related ancillary buildings and facilities;*
- *Permission for continued use of the previously permitted developments under P. Reg. Ref. No. TA/120923 consisting of a discharge water treatment facility comprising two lagoons (30m x 13m), an oil interceptor, a reed bed (27m x 10m) and a concrete canal with "V" notch weir;*
- *Permission for a small lateral extension of c.0.9 hectares from the existing quarry area of c.9.7 hectares as permitted under P. Ref. 01/1018 (PL17.127391) to give an overall extraction footprint of c.10.6 hectares;*
- *Permission for the deepening of the overall extraction area (c.10.6 hectares) by 2 no. 15m benches to a final depth of c.45m AOD from the current quarry floor level of c.75m AOD as permitted under P. Ref. P. Ref. 01/1018 (PL17.127391);*

- *Permission for a proposed new rock milling plant to be enclosed within a steel-clad building (c.575m² with roof height of 22.5m and exhaust stack height of 28.2m);*
- *Replacement of existing septic tank with a new wastewater treatment system and constructed percolation area;*
- *Restoration of the site to a beneficial ecological after-use;*
- *All associated site works within an overall application area of 31.1 hectares. The proposed operational period is for 20 years plus 2 years to complete restoration (total duration sought 22 years).*

The proposed quarry development is located c. 1.6km east of the St Gorman's Well County Geological Site (Ref. No. MH028) and attached with this submission is a copy of the CGS report for reference.



The GSI IGH programme will be consulted by Meath County Council once the planning application is submitted. However, this consultation submission is being undertaken prior to the submission of the planning application, on behalf of Kilsaran.

The current County Development Plan for Meath (2021-2027) lists the St. Gorman's Well site at Ballynakill as a Site of Geological Importance. Policy HER POL 46 of the Development Plan states that the Council will "*maintain the geological and geomorphological heritage values of County Geological Sites listed in Table 8.7 and, through consultation with the Geological Survey of Ireland, protect them from inappropriate development.*"

The County Geological Site report for St Gorman's Spring notes the main geological or geomorphological interest of the site as:

"This warm spring found northwest of Enfield reportedly covers an area of approximately 40m2 during periods of high discharge. Temperatures vary between 12° and 25° depending on climate conditions and seasonal variations. The spring occasionally overflows into an adjacent swamped area from where it is channelled into a local ditch drainage network. The substratum is primarily composed of large limestone fragments and gravel. St. Gorman's Spring is described as being seasonal, completely drying up towards the end of the summer."

Following An Bord Pleanála refusal of an application (P. Ref. TA161227 / ABP Ref. PL17.249132) to deepen Rathcore quarry in 2016 Kilsaran commissioned David Ball to complete a hydrogeological assessment at Rathcore Quarry. The reasons for the refusal related to the hydrogeology of the quarry and the potential of the development to impact St. Gorman's Well.

The resulting Hydrogeological Investigation Report is a significant body of work and presents a very detailed assessment which relies both on historic geological/hydrogeological data as well recent hydrogeological investigations. The detailed assessment was carried out over the period 2019-2022.

It is proposed to include the full and comprehensive assessment undertaken by David Ball in full as an appendix to the EIAR and summarise the findings in the Water Chapter of the EIAR. It is also proposed that the Hydrogeological Investigation Report (Ball, 2022) will be shared with the Geological Survey in time as a knowledge sharing exercise. For completeness, a summary of the findings is provided below.

The findings of the Hydrogeological Investigation Report (Ball, 2022) with respect to **Regional Geology** are summarised as:

- The regional geology contains areas underlain by fault-bounded blocks of massive Waulsortian Limestone, heavily weathered Waulsortian Limestone, the Lucan Formation (dark limestones and shales) and weathered versions of the Lucan Formation.
- According to David Ball's updated bedrock geology map (Figure 2.50) Rathcore Quarry lies in the southeastern corner of a large fault-bounded block of typically unweathered Waulsortian Limestone, referred to as the Cullentry Block.
- The southern section of this block of Waulsortian Limestones is broken up into 3 separate blocks – the Rathcore Block in the east (the location of the quarry), the Ballinakill Block in the centre and the Clonguiffin Block in the west.
- These 3 no. blocks of massive limestones are separated by fault-bounded blocks of heavily weathered limestones which are visible as topographic lows in today's landscape.
- A large northwest to southeast orientated fault lies to the south of these blocks, with the Lucan Formation located to the south.

The findings of the Hydrogeological Investigation Report (Ball, 2022) with respect to more **Local Geology** within Rathcore Quarry are summarised below:

- Extensive gravel deposits are present in the Rathcore area, and those are much more extensive than indicated on the Teagasc / GSI soil map. We note that Rathcore Quarry was initially a sand and gravel pit on the side of Rathcore Hill.
- The quarry is composed of karstified Waulsortian Limestone.
- No significant areas of dolomitised limestone have been recorded at Rathcore Quarry.
- The Lucan Formation is not present at Rathcore Quarry despite being mapped by the GSI.
- Karst solution weathering is ubiquitous but also heterogenous in the Waulsortian Limestone.
- Drilling at the quarry has revealed the presence of an open underground cavity system. The conduits which contain water are not present everywhere and they are generally not well connected to each other.
- The rock between these conduits is solid and will not store groundwater.
- Karst depressions and conduits encountered during drilling have been either partially or wholly filled with clay. Some of the cavities contain little water while others have greater water flows.
- Structural investigations have revealed that there are 2 no. main fault/fracture orientations. Structural features dating from the Carboniferous period, associated with the Variscan orogeny, have a general east-west orientation, while Cenozoic structures have a northwest to southeast or northeast to southwest alignment.
- Correlation of the drilling logs with conductivity sections obtained from Tellus have revealed an excellent correlation and have shown that the Waulsortian Limestone is karstified both at Rathcore and in the wider area;
- The younger Cenozoic faults are likely to provide the potential for a network of shallow to deep conduits, while the older Carboniferous faults have been squeezed closed and are less likely to be karstified or solutionally enlarged.

The key findings of Hydrogeological Investigation Report with regards to **St. Gorman's Well** are summarised as follows:

- Water flows from St. Gorman's Well when the groundwater table is sufficiently high. In recent years the well has only flowed in winter.
- There are a total of 3 no. groundwater flow systems present at St. Gorman's Well:
    - A shallow, overburden-upper epikarst system that responds rapidly to rainfall recharge;
    - A deeper, confined/pressurised, more regional, major conduit karst system at depths of 30 - 100m in the Waulsortian Limestones. This system is confined by clays and decomposed limestones which separate the deep karst groundwater system from the shallow perched water table in the overburden; and
    - A very deep 'U-shaped' conduit system (50-1000m) which brings water from the great depths to the surface.

- The warm water flowing from St. Gorman's Well originates from a deep Cenozoic aged fault system which brings the water to sufficient depths to be warmed to 20°C. This fault is associated with the deep 'U-shaped' conduit groundwater flow system. Water flows down and along a 'U-shaped' conduit when rainfall recharge occurs at the inlet, which raises water levels to a level higher than that at St. Gorman's Well. This pressure drives water from depth to the surface when the head (i.e., the pressure) is sufficient.
- The exact source or location of the inlet to this deep conduit is unknown. In his assessment David Ball (Ball, 2022) states that it may be related to a northeast-southwest orientated strike-slip fault which runs under Ballinakill Hill to St. Gorman's Well. Rainfall falling in the Ballinakill Hill area, recharges the deep conduit karst system. The 'U-shaped' deep conduit system brings this water, in the confined karst aquifer, to great depths. When there is sufficient pressure, the water is driven to the surface at St. Gorman's Well.
- The origin of the warm water is unlikely to be from the Rathcore Quarry area. The natural groundwater levels at the quarry are only slightly elevated with respect those at St. Gorman's Well. We note that the elevation of the base of the well is ~75mOD (i.e., the same as the current floor of the quarry). This does not create sufficient pressure to drive the water down to a great depth and to then push it back to the surface at St. Gorman's Well. The winter 2021 pumping test showed that when the water levels at the quarry are reduced to ~20m below those at St. Gorman's Well, the flow at the well remained high. This indicates that there is no link between the lowering of the water levels at the quarry and the groundwater system which drives warm water to the surface at St. Gorman's Well.
- A long, high-rate pumping test was completed to simulate the further dewatering of Rathcore Quarry. The water level monitoring results showed that the pumping test completed in winter 2021 had no effect on the water levels at St. Gorman's Well when the well was flowing. However, an earlier long pumping test, completed in the summer, autumn and early winter of 2020, showed that the pumping from the quarry will lower groundwater levels when there is little groundwater recharge and when St. Gorman's well is not flowing.
- Therefore, pumping at the quarry had an effect on groundwater levels at St. Gorman's Well when the water levels were low but did not have an effect when groundwater levels were high, and groundwater was flowing from the well.
- Based on the results of the pumping tests, designed to simulate the effects of the long-term quarry dewatering, the following conditions arise:
    - In winter conditions when there is enough recharge, St. Gorman's Well will continue to flow even if future groundwater dewatering at the quarry is implemented.
    - In summer conditions when there is limited recharge and St. Gorman's Well is not flowing, there is potential for future quarry dewatering to lower groundwater levels slightly at St. Gorman's Well. This seasonal impact does not affect the ability of St. Gorman's Well to overflow during winter conditions.

If the GSI has any comments in relation to any implications of the proposed application on St Gorman's Spring CGS we would value the feedback at this time.

Thank you for your time and if you require any further information, please do not hesitate to contact the undersigned.

Kind regards,

SLR Environmental Consulting (Ireland) Ltd

Shane McDermott
Technical Director
smcdermott@slrconsulting.com

Attachments St Gorman's Spring County Geological Site Report

cc Fergus Gallagher (Kilsaran)

MEATH - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE	**St. Gorman's Spring**		
Other names used for site	St. Gorman's Well, Hotwell House		
IGH THEME:	IGH 16 (Hydrogeology)		
TOWNLAND(S)	Ballynakill		
NEAREST TOWN	Summerhill		
SIX INCH MAP NUMBER	48		
NATIONAL GRID REFERENCE	274080 244200 = N 7408 4420		
1:50,000 O.S. SHEET NUMBER	49	**1/2 inch Sheet No.**	13

Outline Site Description
Warm spring.

Geological System/Age and Primary Rock Type
Lower Carboniferous (Waulsortian) limestone.

Main Geological or Geomorphological Interest
This warm spring found northwest of Enfield reportedly covers an area of approximately 40m^2 during periods of high discharge. Temperatures vary between 12° and 25° depending on climate conditions and seasonal variations. The spring occasionally overflows into an adjacent swamped area from where it is channelled into a local ditch drainage network. The substratum is primarily composed of large limestone fragments and gravel. St. Gorman's Spring is described as being seasonal, completely drying up towards the end of the summer.

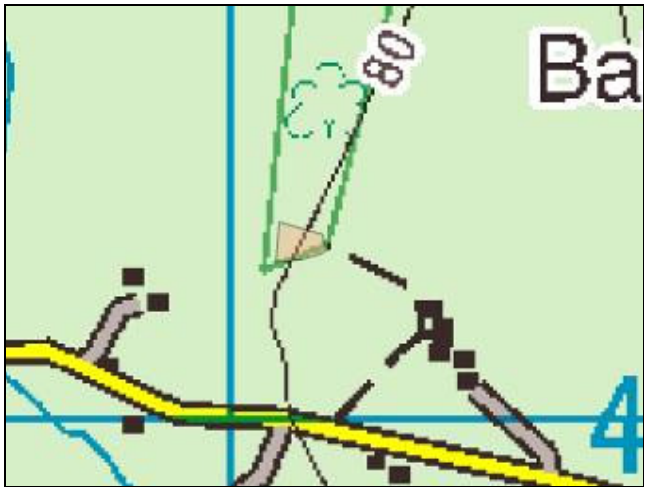
Site Importance
This spring is a very important example of the warm spring province of the Kildare-Meath border area in northwest Leinster. As it is one of the highest temperature warm springs, well studied and the least disturbed in the Leinster province, and probably in the whole of Ireland, it is to be proposed as an NHA. It should also be listed as a County Geological Site in Meath.

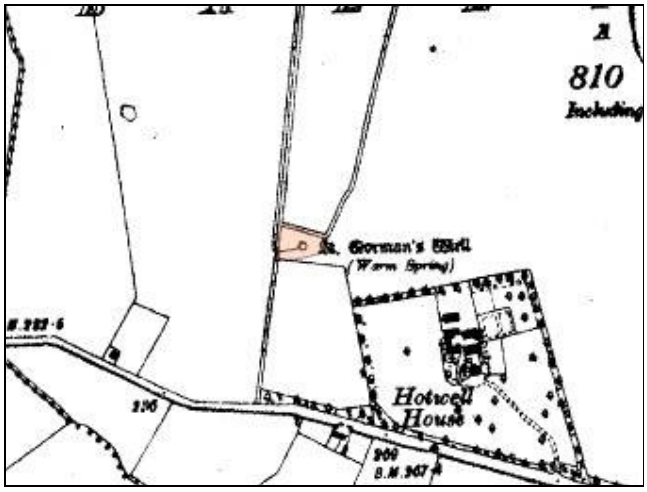
Management/promotion issues
The spring lies within the grounds of the aptly named Hotwell House. As this site is on private land it is not suitable for general promotion without first contacting the owner.

Left: A view of St. Gorman's Spring, taken in February.
Right: Steam rising from St. Gorman's Spring. This is generated by the geothermal processes that heat the water to as much as 25°. Photo taken in February.

Photos by Percy Foster

St. Gorman's Spring





Shane McDermott

From: Clare Glanville (DECC) <Clare.Glanville@decc.gov.ie>
Sent: 01 February 2024 14:19
To: Shane McDermott
Cc: DECC GSI Planning; Patricia Smullen (DECC)
Subject: FW: GSI Consultation / Kilsaran / Quarry extension at Rathcore, Co Meath

Hello Shane,
Thank you for your emails below and for being persistent with following up with us. I have discussed this with my colleagues in the groundwater section and can confirm that at the moment we have no further comments to add.

Kind regards, Clare

Please note: I am unavailable on Tuesdays and Thursdays.

Dr Clare Glanville Senior Geologist Geoheritage & Planning.
Geological Survey Ireland, Booterstown Hall, Booterstown Ave., Blackrock, Dublin A94 N2R6, Ireland. **T** +353 (0)1 678 2000 **E** clare.glanville@DECC.gov.ie **www.gsi.ie**
A division of the Department of the Environment, Climate and Communications.

From: Shane McDermott <smcdermott@slrconsulting.com>
Sent: Tuesday 30 January 2024 08:46
To: DECC GSI Planning <GSIPlanning@GSI.ie>
Cc: Lynn Hassett <lhassett@slrconsulting.com>
Subject: GSI Consultation / Kilsaran / Quarry extension at Rathcore, Co Meath

Dear Sir / Madam,

I am just following up on the previous email and consultation submission of 9-November, to see if there was any feedback the GSI would like to provide in respect to the proposed development and for which a planning application will be submitted to Meath County Council in the coming weeks.

Thank you for your time.

Kind regards,
Shane

Shane McDermott
Technical Director - Environmental & Social Impact Assessment

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E smcdermott@slrconsulting.com

SLR Consulting Ireland
7 Dundrum Business Park, Windy Arbour, Dublin Ireland D14 N2Y7

From: Shane McDermott <smcdermott@slrconsulting.com>
Sent: Friday, December 1, 2023 2:47 PM
To: GSI Planning <GSIPlanning@GSI.ie>
Cc: Lynn Hassett <lhassett@slrconsulting.com>
Subject: RE: GSI Consultation / Kilsaran / Quarry extension at Rathcore, Co Meath

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Kind regards,
Shane

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Technical Director - Environmental & Social Impact Assessment

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7 Dundrum Business Park, Windy Arbour, Dublin Ireland D14 N2Y7

From: Shane McDermott <smcdermott@slrconsulting.com>
Sent: Thursday, November 9, 2023 5:30 PM
To: GSI Planning <GSIPlanning@GSI.ie>
Cc: Lynn Hassett <lhassett@slrconsulting.com>
Subject: GSI Consultation / Kilsaran / Quarry extension at Rathcore, Co Meath

Dear Sir / Madam,

Please see attached a pre-planning consultation submission for your review submitted on behalf of Kilsaran Concrete Unlimited Company who will be lodging a planning application and accompanying EIAR for extension of their existing permitted development at Rathcore in County Meath.

Should you require any further information in relation to the proposed development please don't hesitate to contact us and we look forward to hearing from you soon.

Kind regards,
Shane

Shane McDermott
Technical Director - Environmental & Social Impact Assessment

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E smcdermott@slrconsulting.com

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