



Rialtas na hÉireann
Government of Ireland



Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

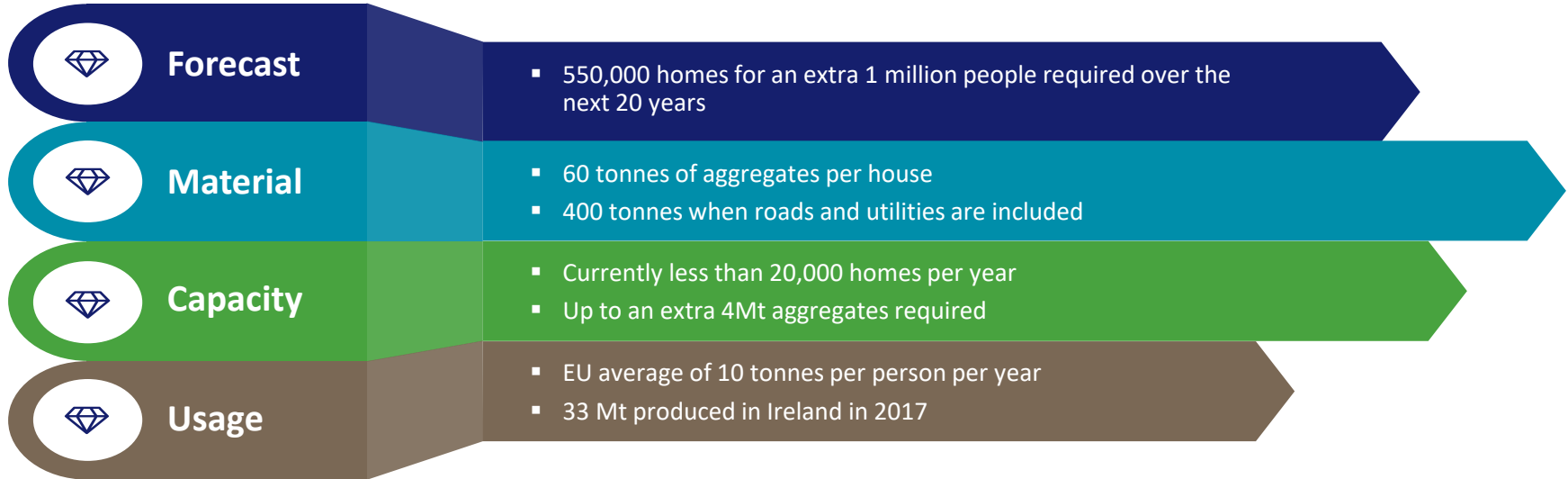
GSI Construction Materials

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Head of Minerals Programme

February 2023

Aggregate Challenges



Planning Challenges



- Development Plan
 - Construction forecasts – how many units/roads will we build?
 - Material forecasts – how much SR 21/PSV material will we need?
 - Material Sources
 - Local quarries/pits – where will we get the material needed?
 - Sustainability – how do we ensure low carbon & local sourcing?
 - Natural Resources Planning
 - Existing facilities – how do we ensure the future supply of material?
 - New facilities – how do we avoid inadvertent sterilisation of resources?
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GSI Solutions

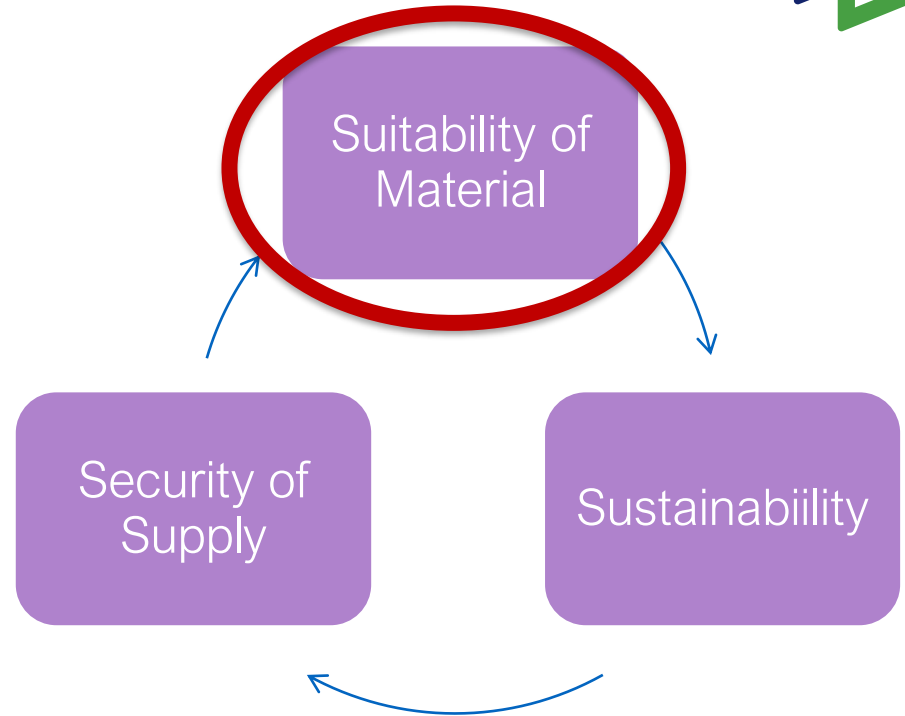


- Aggregate Potential map
 - National scale mapping
 - Data on crushed rock potential & granular potential
 - Quarry database
 - Directory of active quarries and pits in Ireland
 - Under development as online source
 - Data on quarry activity including products etc..
 - Market surveillance support
-

Irish Construction Materials



- Suitability
 - Market Surveillance of standards
 - Dimension Stone sources
- Sustainability
 - Carbon footprint
 - Locally derived material
- Security of Supply
 - Planning challenges
 - Material sources



Irish Construction Materials



- GSI
 - Competent National Authority
 - Aggregates Only
 - Overlap with TII
 - Not Market Surveillance
 - Not Authorised Officers
- Operators
 - “Reasoned Request”

SCHEDULE 2

COMPETENT NATIONAL AUTHORITIES

For the purpose of Articles 11(7), 11(8), 12(2), 13(7), 13(9), 14(4) and 14(5) of the Construction Products Regulation and having regard to Regulation 9 of these Regulations, the bodies set out in Column 1 have been specified as being competent national authorities in respect of the area codes set out in Column 2 and, subject to the exclusions set out in Column 4, the associated product areas set out in Column 3.

COLUMN 1 COMPETENT NATIONAL AUTHORITY	COLUMN 2 AREA CODE(S)	COLUMN 3 PRODUCT AREA(S)	COLUMN 4 EXCLUSIONS
Geological Survey of Ireland	24	Aggregates	
National Roads Authority	12	Circulation Fixtures: Road Equipment	EN 12676-1 EN 1423 EN 12352 EN 12368 EN 12899-2 EN 12899-3
	23	Road Construction Products	EN 14188-1 EN 14188-2 EN 14188-3 EN 13877-3 EN 15322 EN 14695
	24	Aggregates	EN 13139 EN 13055-1 EN 13055-2 EN 13450 EN 13383-1



GIVEN under my Official Seal,
27 June 2013.

Market Surveillance Support

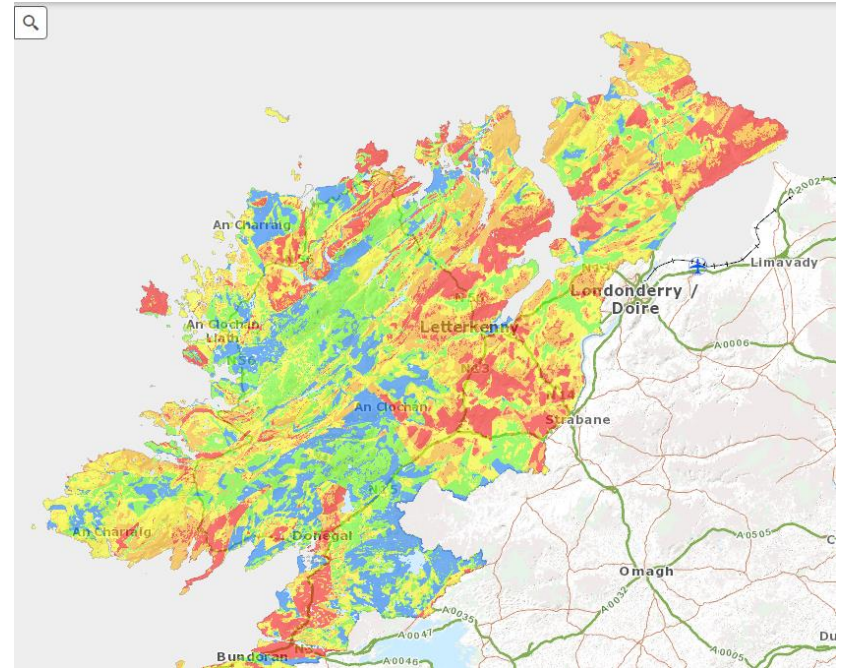


- GSI
 - State's Geologists
 - Competent in rocks
 - Respond to MS requests
- Operators
 - Geologists' Reports
 - Quarry Geology



Current Activity

- NSAI TCs
 - DCB Steering Group
- Technical Analyses
 - Donegal Report
- Industry Support
 - Geological Queries
- Research



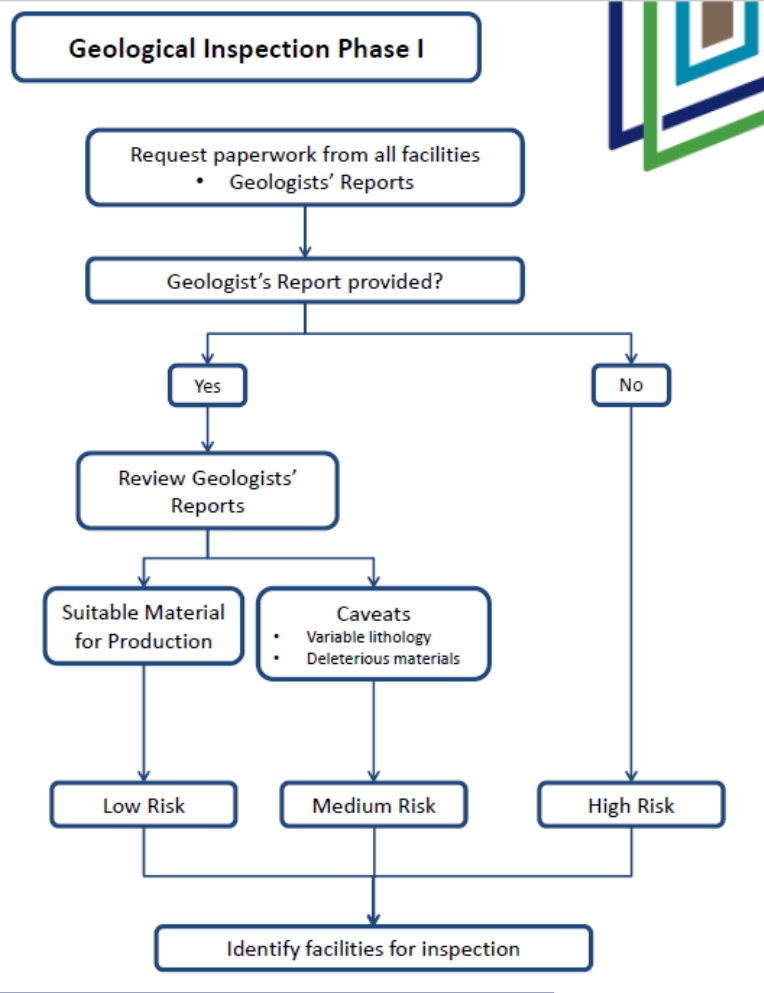
Donegal Audit Support



- 15 locations from NBCO
 - 9 locations with data/reports
 - 17 locations visited
 - On site visual petrological assessment
 - Samples taken from 6 sites
 - Full Lab analysis performed on 9 distinct samples of sands and aggregates
 - Producers of standardised material requiring a Professional Geologist's Report
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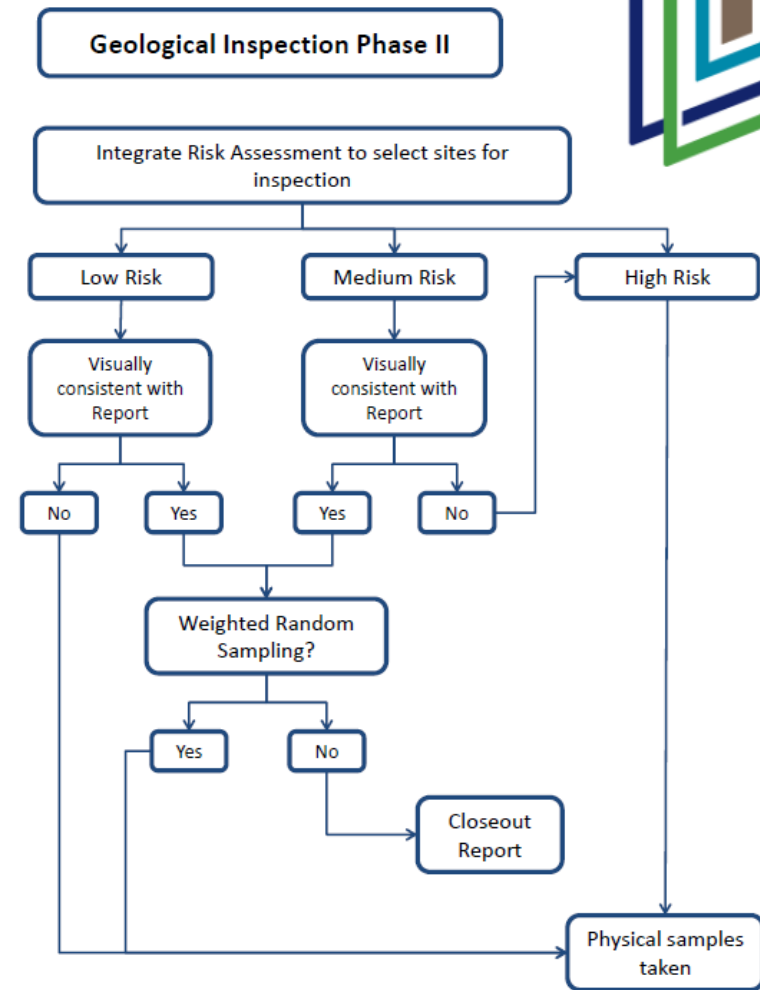
Geologist's Visit

- 3 Phase Risk Assessment
 1. Review of Geologist's Report



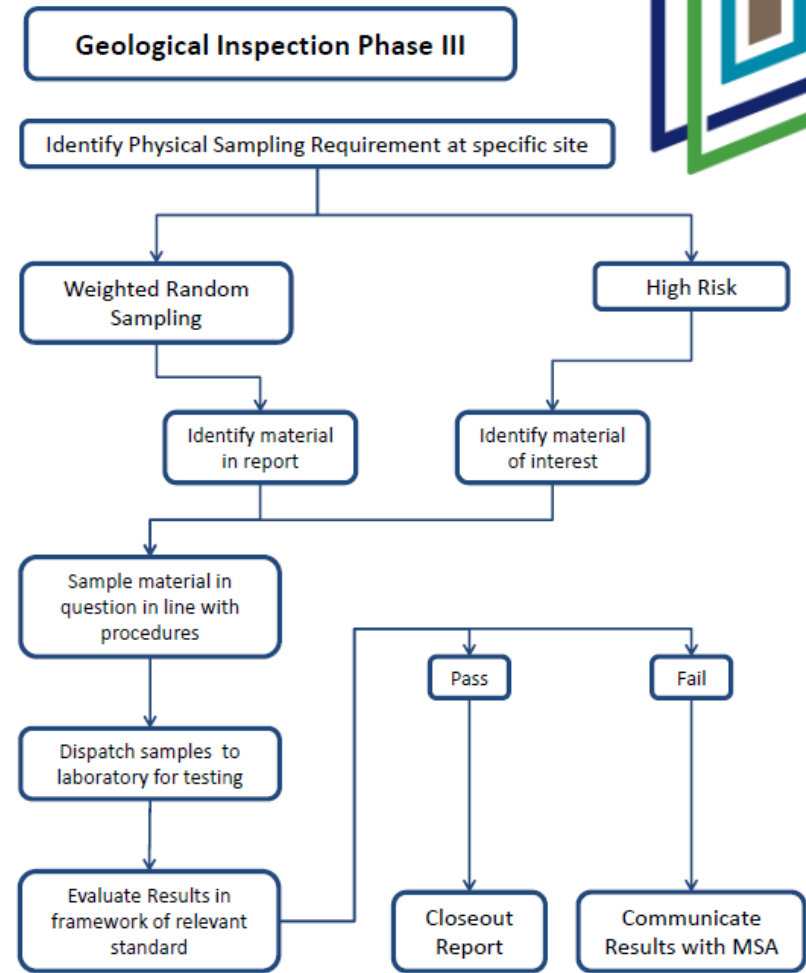
Geologist's Visit

- 3 Phase Risk Assessment
 1. Review of Geologist's Report
 2. Site Visit



Geologist's Visit

- 3 Phase Risk Assessment
 1. Review of Geologist's Report
 2. Site Visit
 3. Analysis of samples
- Submission of Report to MSA



Non compliance example



- Oct 2021 – request for technical assistance following withdrawal of certification
 - Oct 2021 – site visit to manufacturing facility
 - Samples taken from 3 stockpiles
 - Dec 2021 – petrographic report received from laboratory
 - Identification of technical non-compliance in material sourced externally
 - Dec 2022 – potential non-compliance communicated to MSAs
 - Feb 2022 – site visit to take sample of SR 16 material at source
 - Jul 2022 – report received from laboratory
 - Identification of technical non-compliance in material
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Non compliance example



- Aug 2022 – Non-compliance finding communicated to MSAs
 - Sep 2022 – site visit to manufacturing facility with MSAs
 - Samples taken from stockpiles (product) & quarry face (raw material)
 - Alteration to quarrying plan agreed with operator
 - Samples sent to alternative lab
 - Dec 2022 – petrographic report received from laboratory
 - Confirmation of original reports
 - Jan 2023 – Geological Audit Close Out
 - Confirmation of initial findings
 - Confirmation of suitability of material for SR16 going forward
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Geologist's Role



- 3 Aggregate Standards Require a Professional Geologist
 - S.R. 16 - Guidance on the use of I.S. EN 12620:2002+A1:2008 - Aggregates for concrete
 - S.R. 18 - Guidance on the use of I.S. EN 13139:2002 - Aggregates for mortar
 - S.R. 21 - Guidance on the use of I.S. EN 13242:2002+A1:2007 – Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction
 - Professional Geologist
 - In the context of this S.R., the Competent Person will be listed as a Professional Member of the Institute of Geologists of Ireland, or an equivalent professional body, with an established record of a minimum of 5 years of practical assessment of geological resources, with experience of quarries and aggregate deposits, and assessment of aggregates for proposed end-use suitability.
 - IGI maintain a Specialist Register
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Geologist's Role S.R.16



- Section 3.5.2 – Knowledge of the raw material
 - Geological assessment of the quarry
 - “The geological assessment of the deposit should identify and map the main lithologies and their relative proportions within the quarry”
 - New assessment when there is a change in lithology
 - Table A.1
 - Fines quality in fine aggregate if fines content > 3%
 - $S \leq 1 \%$ generally and $S \leq 0,1 \%$ if pyrrhotite is present
 - Alkali Silica Reaction
 - Petrographic assessment
-

Geologist's Role S.R.16



- Annex C – Assessment of the aggregate
 - Geological Assessment of the raw material references I.S. EN 12620:2002
 - “There shall be documentation detailing the nature of the raw material, its source and where appropriate, one or more maps showing the location and extraction plan”
 - A petrographic examination of the aggregate should be carried out
- Table B.7 – Aggregates containing pyrrhotite
 - Total sulfur $S \leq 0.1\%$



Geologist's Role S.R.18



- Section 3.5.2 – Knowledge of the raw material (Annex B.2)
 - Geological assessment of the quarry
 - New assessment when there is a change in lithology
 - Table A.1
 - Fines quality in fine aggregate if fines content > 3%
 - Magnesium sulfate soundness
 - $S \leq 1\%$ generally and $S \leq 0,1\%$ if pyrrhotite is present
 - Constituents which alter the rate of setting and hardening of mortar
 - Alkali Silica Reaction
 - Petrographic assessment
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Geologist's Role S.R.18



- Annex B.2 – Raw Material (Quarry)
 - “The geological assessment of the quarry deposit should identify and map the main material types present and their relative proportions within the source”
 - New assessment when there is a change in lithology
 - Geological Assessment of the raw material references I.S. EN 13139:2002
 - “There shall be documentation detailing the nature of the raw material, its source and where appropriate, one or more maps showing the location and extraction plan”
 - Annex B.3 – Aggregates Product
 - “A petrographic examination should be carried out by a Competent Person to determine the presence of potentially deleterious material”
 - Annex C – Summary of Tasks
 - Useful guide for manufacturers as to Geologist's responsibilities
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Geologist's Role S.R.21



- Section 3.5.4 – Knowledge of the raw material
 - Geological assessment of the quarry
 - “The assessment of the deposit should identify and map the main lithologies and their relative proportions within the quarry”
 - Geological Assessment of the raw material references I.S. EN 13242:2002
 - “There shall be documentation detailing the nature of the raw material, its source and where appropriate, one or more maps showing the location and extraction plan”
 - New assessment when there is a change in lithology
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Geologist's Role S.R.21



- Annex E – sub floor fill
 - Geological assessment of the aggregate (at least quarterly)
 - Sedimentary mudrock limited to maximum of 10% (P.Geo may reduce this)
 - Petrographic assessment if specified by P.Geo
 - “a petrographic assessment involving transmitted and reflected light evaluation of sections”
 - Where $S > 1\%$, the material is not suitable for use
 - Where $S \leq 0.1\%$, the aggregate is deemed suitable for use
 - “The level of $S > 0.1\%$ is intended as a trigger action level for further evaluation of the material”
 - If pyrrhotite is present, the limit is $S \leq 0.4\%$
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Geologist's Role



- Is your Geologist a “Competent Person”
 - IGI Specialist Register <https://igi.ie/specialist-registers/>
 - Geological Assessment of the raw materials
 - Identification of main lithologies and relative proportions within the quarry
 - Map of quarry showing main lithologies
 - Identification of potentially problematic lithologies or deleterious materials
 - Petrographic Assessment of the product
 - Representative samples
 - Identification of main mineralogies and relative proportions and distribution
 - $S > 0.1$ % is intended as a trigger action level for further
 - If suspected potential pyrrhotite, reflected light examination is recommended
 - Statement of compliance for the proposed end use
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Questions

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