



Northern and Western Regional Assembly,
The Square,
Ballaghaderreen,
Co Roscommon
F45 W674

06 February, 2019.

Re: Draft Regional Spatial and Economic Strategy (RSES) for the Northern and Western Regional Assembly

Your Ref:

Our Ref: 18/150

A chara,

Geological Survey Ireland is Ireland's national earth science knowledge centre. Geological Survey Ireland provides free, open and accurate data and maps of Ireland's subsurface to landowners, the public, industry and all other stakeholders, within Ireland and internationally. Geological Survey Ireland is a division of the Department of Communication, Climate Action and Environment. The Department's objective is to ensure the sustainable extraction and use of Ireland's natural resources, ensuring an economy based on resource efficiency and aiding the advancement of geoscience through the work of Geological Survey Ireland. With reference to the notice received on 23 November, 2018, concerning the Draft Regional Spatial and Economic Strategy (RSES) for the Northern and Western Region, Geological Survey Ireland would like to make the following comments.

The Draft RSES – NWRA SEA Environmental Report has discussed Bedrock Geology, Mining, Sand and Gravel, and Geological Heritage under Section 5.2 Environmental Characteristics under the subsection 5.2.3 Soil, Geology and Hydrogeology. Geological Survey Ireland has been referenced as a source of information for the report. Geological Survey Ireland provides information on all aspects of the geology of Ireland on our Map Viewer available on the Geological Survey Ireland website www.gsi.ie. There are multiple layers of data available including Geology, Groundwater, Quaternary, Landslides, and Geological Heritage. Our newest map is the Physiographic Units map and this is especially designed to give information on land use. We would encourage the use of our [Map Viewer](#) when undergoing the planning process.

Geoheritage

Within the Regional Planning Policy Objectives, conservation is mentioned as a key theme. RPO 81 concerns the conservation and protection of designated areas and natural heritage area as well as European sites and their integrity. RPO 82 also encourages the development of awareness and creating greater appreciation of the benefits of our natural heritage, including on the health, wealth and well-being of the regions ecosystem services.

Geological Survey Ireland is in partnership with the National Parks and Wildlife Service (NPWS, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs) to identify and select important geological and geomorphological sites throughout the country for designation as geological NHAs (Natural Heritage Areas). This is addressed by the Irish Geoheritage Programme (IGH) of Geological Survey Ireland, under 16 different geological themes, in which the minimum number of scientifically significant sites that best represent the theme are rigorously selected by a panel of theme experts.

County Geological Sites (CGS), as adopted under the National Heritage Plan, include additional sites that may also be of national importance but which were not selected as the very best examples for NHA designation. All geological heritage sites identified by Geological Survey Ireland are categorised as CGS pending any further NHA designation by NPWS. CGS are now routinely included in County Development Plans and in the GIS of planning departments, to ensure the recognition and appropriate protection of geological heritage within the planning system.

County Geological Sites in audited and unaudited counties can now be viewed online under the Geological



Heritage tab on the Geological Survey Public Data Online Viewer at: [Geological Survey's Online Viewer](#) or via a direct link at: [Geoheritage Online Viewer](#).

The County Audits for Cavan, Sligo, Roscommon and Monaghan have been completed and are available for viewing on the [Geoheritage section](#) on our Website. The Audits for Donegal, Galway, Leitrim and Mayo are ongoing and will be published when completed. Information is provided on the CGSs within these counties on our Map Viewer, but the details should be considered preliminary.

Natural Resources (Minerals/Aggregates)

The Northern and Western region is a world class investment location for exploration and mining companies and is currently host to a major producing gypsum mine while there is an extensive mining history that includes Tynagh, Arigna, and Abbeystown where advanced stage exploration is currently ongoing. The region is an internationally renowned exploration destination with potential for metal exploration, particularly in the more rural areas. Known major base metal occurrences are found in Roscommon, Sligo and Galway while Monaghan, Mayo and Donegal are internationally attractive destinations for gold exploration, including the Clontibret gold deposit.

The significance of the natural resources sector, as outlined in the above example and recently published [research undertaken by Indecon1 is reflected in the National Planning Framework \(NPF\) under National Policy Objective 23 \[pg. 78\]](#), which states; *“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. 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.”*

Geological Survey Ireland submits that the potential employment and sustainable development benefits of this sector to rural communities should be explicitly recognised within the Spatial and Economic Strategy of the Regional Assembly. Additionally, it is clear that the sustainable development of Irish natural resources has an increasingly large role to play in the transition to a lower carbon greener economy. In particular, development of the zinc prospects located in the Northern and Western region could help to position Ireland as major international source of battery technology and raw materials. Chapter 4.5.2 of the Draft Regional Spatial and Economic Strategy clearly outlines the country and the region’s commitment to climate change prevention and mitigation. Geological Survey Ireland submits that the potential contribution of the natural resources sector in Ireland to the climate change challenge should be explicitly recognised within the draft document, particularly given the region’s international standing as both a current and future producer of battery critical elements.

Aggregate Requirements

The NPF and the draft RSES recognises that the Northern and Western region is projected to grow in population size by at least 180,000 people over the next 20 years, requiring a commensurate increase in housing stock. On a national level the National Development Plan has projected the need for over 500,000 new housing units nationally, with an average rate of 25,000 new units per year. Nationally at present less than 20,000 units have been constructed every year since 2010 however the number of units completed is likely to increase over the coming years. This has led to the Housing Agency identifying urban settlement housing shortfalls in nine locations across the state. Existing and future housing growth will require a sustainable aggregate supply to construct these residential units; therefore it is important that the role of aggregates is recognised within the strategy. Couple with the delivery of housing units is the need to deliver infrastructure of all kinds which enable the population of the NWRA to live, work and recreate.

The Strategic Investment Priorities enumerated in the NPF are significant drivers of this demand, particularly the first three; Housing and Sustainable Urban Development, National Road Network and Rural Development. It is



clear that a significant expansion in housing and complementary infrastructure is required to support sustainable development in the years leading up to 2040 and this will require an associated expansion in aggregate production and capacity.

Research by the British Geological Survey has estimated that the aggregate material required for each housing unit is approximately 60 tonnes per residential unit, increasing to 400 tonnes per unit when roads and utilities are included. This research broadly aligns with international figures and is therefore applicable in an Irish context. Simply to meet Ireland's projected housing requirements; 220 million tonnes of aggregate will be required over the next 20 years, over 10 million tonnes per year solely for the residential construction market. At present, Ireland produces approximately 30Mt of aggregate material which is projected to expand by a minimum of 15% per annum. The projected aggregate needs of the Northern and Western region will almost certainly require the expansion and development of quarry capacity in line with the National Planning Framework.

Geological Survey Ireland is firmly of the view that the sustainable development of our natural resources should be an integral part of all development plans from a national to regional to local level to ensure that the materials required for our society are available when required. Geological Survey Ireland highlights the consideration of mineral resources and potential resources as a material asset which should be explicitly recognised within the environmental assessment process. A designation which prejudices the development of a local resource may lead to material being sourced from a greater distance at a commensurately larger environmental cost.

Geological Survey Ireland has identified several Regional Policy Objectives which it wishes to highlight from a mineral resources and mineral potential standpoint. Geological Survey Ireland would be happy to make a further presentation on any topic mentioned within this submission.

RPO 40: To position the region to avail of the emerging global market in renewable energy by:

- *stimulating the development and deployment of the most advantageous renewable energy systems*
 - a) *support research and innovation*
 - b) *encourage skills development and transferability*
 - c) *raise awareness and public understanding of renewable energy encourage market opportunities for the renewable energy industry to promote the development and growth of renewable energy businesses.*

Geological Survey Ireland highlights the natural resources required to decarbonise the energy economy. Larger quantities of base metals and energy critical elements such as rare earths, lithium and cobalt will be required for society to make the transition to greener technology and to meet Ireland's climate commitments. The Northern and Western Region is well placed to contribute to this move by sustainable development of its strategically important natural resources

RPOs 108 through 124: Enhancing the transport connectivity across the region

Geological Survey Ireland highlights the need to consider the availability of construction materials in the infrastructural planning process. The location, quality and quantity of available material is a significant factor that should be considered within the spatial planning strategy. Additionally, the largest cost both economically and environmentally in the production of aggregates is the transport of material from the source to the final destination. A development plan which incorporates the sustainable production of aggregates from local sources can significantly contribute towards the lowering of the carbon cost of construction.

RPOs 163 through 69: Enhancing the development of employment skills to underpin the development of a knowledge economy.

Geological Survey Ireland highlights the potential of the natural resources sector to contribute to the broadening of the rural employment opportunities. The region hosts several geoscience services companies who provide significant levels of high quality jobs in rural region and generate export revenues through their international



expertise. This could be expanded through the supported sustainable development of the exploration and mining sector.

Marine and Coastal Unit

The Draft Regional Spatial and Economic Strategy, under numerous RPOs, highlights the importance of the marine economy, offshore wind energy production, coastal heritage and the development of harbors and ports. The [Marine and Coastal Unit](#) of Geological Survey Ireland is tasked with the joint management of Ireland's seabed mapping programme, INFOMAR (Integrated Mapping For the Sustainable Development of Ireland's Marine Resource) in partnership with the Marine Institute. Additionally, Geological Survey Ireland and INFOMAR teams are involved with the INTERREG funded CHERISH (Climate and Heritage of Reefs, Islands and Headlands) project and European Space Agency funded coastal erosion studies, which involve expertise in the fields of satellite and drone mapping.

Geological Survey Ireland operates several vessels on behalf of this globally recognized programme focused on seabed mapping in the near-shore and offshore environments. Through these projects and programmes, a comprehensive knowledge base has been developed with the Geological Survey Ireland and INFOMAR programmes in relation to marine and coastal mapping projects, data analysis and interpretation. Geological Survey Ireland is pleased to offer this knowledge base in support of the RSES and other future initiatives.

Geological Survey Ireland is actively involved in the acquisition of very high resolution data in the marine and coastal environment from vessel, satellite and drone based sensors. According to the MSP Directive 2014/89 EU, member states are obliged to make use of best available data. Due to the nuances and large file sizes of these datasets, web-viewers are often obliged to host lower fidelity versions of these datasets. Also, Geological Survey Ireland notes that various applications that relate to marine spatial planning would require data at varying spatial resolutions. As originators of these data, Geological Survey Ireland / INFOMAR are happy to provide advice and guidance on the optimal application of these datasets as they relate to ongoing planning objectives during the development of Ireland's Marine Spatial Plan.

Geological Survey Ireland has identified several Regional Policy Objectives which it wishes to highlight for the RSES in the context of the INFOMAR seabed mapping programme and the free availability of [high quality marine datasets](#); a commentary is provided below for reference and Geological Survey Ireland/INFOMAR are available to provide further information in relation to the considerations set out below:

RPO 56: Geological Survey Ireland suggests that stakeholder engagement and cross-border and cross boundary cooperation using high quality datasets represents a useful starting point in associated dialogues.

RPO 77: In addressing coastal erosion the strategic application of Earth Observation techniques in the identification and monitoring of coastal vulnerability to erosion is being addressed by Geological Survey Ireland through an ESA funded initiative while significant insight into the monitoring of at risk sites through the use of repeat UAV surveys is currently being coordinated with the Office of Public Works. Again these datasets are available through Geological Survey Ireland along with corresponding guidance.

RPO 57: INFOMAR data products are a key baseline dataset for the development of key oceanographic models underpinning Irish fisheries research.

RPO 60, 62 and 63: The INFOMAR programme maintains a comprehensive database of shipwrecks and sites of relevance to coastal heritage are being actively studied as part of the CHERISH project.

RPO 61: As part of the nationwide seabed survey, INFOMAR vessels have surveyed many of the national ports and harbours on the coast. These data represent a useful baseline for monitoring and mapping change through subsequent survey work on the part of the various ports.



RPO 79 and 81: INFOMAR have a strong working relationship with National Parks and Wildlife Service (NPWS) carrying out an appropriate assessment annually and INFOMAR data have been used in the designation of several SACs offshore

RPO 43, 48 and 58: As custodians of Ireland's national marine dataset, which is made freely available to all stakeholders including operators in the field of offshore wind energy, INFOMAR are well positioned to offer guidance on the analysis and interpretation of high resolution seabed data for the identification of suitable sites for the development of offshore renewable energy.

Groundwater

Groundwater is important as a source of drinking water, and it supports river flows, lake levels and ecosystems. It contains natural substances dissolved from the soils and rocks that it flows through, and can also be contaminated by human actions on the land surface. As a clean, but vulnerable, resource, groundwater needs to be understood, managed and protected. Through our [Groundwater Programme](#), Geological Survey Ireland provides advice and maps to members of the public, consultancies and public bodies about groundwater quality, quantity and distribution. Geological Survey Ireland monitors groundwater nationwide by characterising aquifers, investigating karst landscapes and landforms and by helping to protect public and group scheme water supplies.

Our Groundwater Programme also engages in regional and national projects, such as CatchmentCARE, an INTERREG VA funded project that aims to improve freshwater quality in cross-border river basins, and GWflood, a groundwater flood monitoring and mapping project aimed at addressing the knowledge gaps surrounding groundwater flooding in Ireland. The Groundwater programme has also produced a suite of national maps, including Groundwater Resources (aquifers), Groundwater Vulnerability and Drinking Water Source Protection Areas and Groundwater Wells and Springs. These maps form part of County Groundwater Protection Schemes, and are available for viewing as layer on [our Map Viewer](#).

Geohazards

Geohazards can cause widespread damage to landscapes, wildlife, human property and human life. In Ireland, landslides are the most prevalent of these hazards. Geological Survey Ireland maintains the national landslide database which contains over 2700 mapped landslide events. This dataset underpins the national landslide susceptibility map which identifies areas which are susceptible to landslides and is measured from Low to High. The [national landslide susceptibility map](#) and landslide database are available in digital format for download and can be viewed online at Geological Survey Ireland's dedicated [Landslide Viewer](#). Geological Survey Ireland is also part of the international Tsunami Warning System, coordinated by the Intergovernmental Oceanographic Commission of UNESCO. We recommend that for the RSES, geohazards should be taken into consideration, especially for developing areas where these risks could be present, and we encourage the use of our data when doing so.

Geothermal Energy

Geothermal energy harnesses the heat beneath the surface of the Earth for heating applications and electricity generation, and has proven to be secure, environmentally sustainable and cost effective over long time periods. Geothermal applications can range in depth from a few metres below the surface to several kilometres. Ireland has widespread shallow geothermal resources for small and medium-scale heating applications, which can be explored online through Geological Survey Ireland's Geothermal Suitability maps for both domestic and commercial use. We recommend use of our [Geothermal Suitability maps](#) to determine the most suitable type of ground source heat collector for use with heat pump technologies. Ireland also has recognised potential for deep geothermal resources. Geological Survey Ireland currently supports and funds research into this national energy resource.

The use of geothermal energy can help to decarbonise our heat energy sector. RPO 39 states that the NWRA shall coordinate the identification of the potential renewable energy sites of scale in collaboration with Local



Authorities and other Stakeholders within three years of the adoption of the RSES and RPO 42 motions for support of the development of secure, reliable and safe supplies of renewable energy, in order to maximise their value, maintain inward investment, support indigenous industry and create jobs.

Recommendations

Geological Survey Ireland is the national earth science agency and has datasets on Bedrock Geology, Quaternary Geology, Geological Heritage Sites, Mineral deposits, Groundwater Resources and the Irish Seabed. These comprise maps, reports and extensive databases that include mineral occurrences, bedrock/mineral exploration groundwater/site investigation boreholes, karst features, wells and springs. Please see our [website](#) for data availability.

I hope that these comments are of assistance, and if we can be of any further help, please do not hesitate to contact me at Dylan.Potter@gsi.ie or my colleague Siobhán Power at Siobhan.Power@gsi.ie.

Le meas,

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