Submission No: 013

An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Clare County Council
Áras Contae an Chláir
New Road,
Ennis
Co. Clare V95 DXP2

13 October 2020

Re: Review of the existing Clare County Development plan 2017 - 2023 and preparation of a new Clare County Development Plan
Your Ref: n/a
Our Ref: 20/235

Geological Survey Ireland is the national earth science agency and has datasets including Bedrock Geology, Quaternary Geology, Geological Heritage Sites, Mineral deposits, Groundwater Resources, Geohazards 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 and we recommend using these various data sets, when undergoing the EIAR, planning and scoping processes. Geological Survey Ireland should be referenced to as such and should any data or geological maps be used, they should be attributed correctly to Geological Survey Ireland.

Dear Sir/Madam,

With reference to your letter dated 18 September 2020, concerning the Review of the existing Clare County Development plan 2017 - 2023 and preparation of a new Clare County Development Plan, Geological Survey Ireland (a division of the Department of Environment, Climate and Communications) welcome the opportunity to be included in the consultation process at this early 'Strategic Issues Paper' stage.

Geoheritage

The Geological heritage county audit for Clare was completed in 2005. The resulting report was an action of the County Clare Heritage Plan 2003-2007. We welcome the mention of geological sites within the 'Built and Natural Heritage, Landscape and Green Infrastructure' section of the issues paper. **However, we would encourage the inclusion of County Geological Sites (CGSs) as specific policy objectives within the new County Development Plan.**

CGSs have been included in the *Clare County Council Development Plan 2017- 2023 Chapter 14,* and more specifically 'Objective CDP14.5' as shown below. Further more the diversity of geological features in the County is highlighted in a GSI publication '*Banner Rocks – The Geological Heritage of County Clare*' which is also referenced in the County Development Plan and available from Clare County Council publications page.

CDP14.5

Development Plan Objective: County Geological Sites

It is an objective of Clare County Council:

A To recognise the importance of County Geological Sites and to protect the character and integrity of these sites;

B To work with the GSI and relevant stakeholders to undertake a review of County Geological Sites during the lifetime of this Plan;

C To promote and facilitate the development of geo-tourism in County Clare in compliance with CDP objectives 14.1 – 14.9, 14.11 and 14.13.

The following points are suggested by the Geological Heritage Programme of Geological Survey Ireland, as appropriate ways in which to address the need to protect geological heritage in any one of Ireland's local authority areas:

As a minimum, Geological Survey Ireland would like the Local Authority to include a policy objective with wording such as:

> **"to protect from inappropriate development the scheduled list of geological heritage sites [Appendix X]."**
> Or
> **"to protect from inappropriate development the following list of County Geological Sites"**

The Geological Heritage Programme views the Local Authorities as critical partners in protecting, through the planning system, those CGS which fall within their county limits. In many cases these are often sites of high amenity or educational value, already zoned or listed in the plan. Listing in the CDP provides protection of the sites against potentially damaging developments that normally require planning permission, such as building, quarrying, landfilling or forestry.

It is also important that the democratic process of public consultation and approval by councillors of the CDP means that stakeholders in the sites and all the local community can buy into the process.

CGSs have been adopted in the National Heritage Plan, and will form a major strand of geological nature conservation to complement the various ecological and cultural conservation measures.
It is important to note however, that management issues for the majority of geological heritage sites may differ from ecological sites, and in some cases development may facilitate enhanced geological understanding of a site by exposing more rock sections - for example, in a quarry extension. Consultation at the earliest stages can identify any issues relevant to an individual site or proposed development.

County Geological Sites are the optimal way of addressing the responsibility of each authority under the Planning and Development Act 2000 and its amendments, to protect sites of geological interest. It would also be necessary to include a policy objective to protect geological NHAs as they become designated and notified to the Local Authority, during the lifetime of the Plan.

As always we are available if you require any further information, please feel free to contact Clare Glanville (Clare.Glanville@gsi.ie).

Culture and Tourism

Over the past number of years geology has become a large part of Irish tourism. Ireland currently has three UNESCO Global Geoparks, **including the Burren and Cliffs of Moher Global Geopark, which has retained its UNESCO Global Geopark status for another four years**. Geological Survey Ireland partially funds and is part of the management structure of this Geopark. These Geoparks, along with other tourism initiatives such as the Wild Atlantic Way, Irelands Ancient East, and Irelands Hidden Heartlands have bolstered tourism in various parts of Ireland and helped to increase its levels in areas that were previously not as popular with tourists. We would encourage Clare County Council to continue this trend, and to use the geological audit information making it easily available to the general public. We would encourage geology to be a significant part of any tourism initiative that may be introduced such as the Loop Head Visitor Experience Development Plan (VEDP) on which Geological Survey Ireland recently made a statutory submission (our ref 20/220).

Dimension Stone/Stone Built Ireland

Geological Survey Ireland recently signed a research collaboration agreement between Geological Survey Ireland, TCD & OPW, to run for a 2 year period with the aim of documenting building and decorative stone in Ireland to inform government agencies, building owners and conservationists of the sources for suitable replacement stone in restoration work and to develop a greater awareness among the general public.

In addition to promoting citizen science and awareness of local materials, the inventory will aid the public in complying with part 4 of the Planning and Development Act 2000, which requires owners to conserve protected structures. It will also assist local authorities in issuing Section 57 Declarations, which outline 'the type of works which it considers would or would not materially affect the character of the structure or any element of the structure'.

This project will build on work already completed funded by the Irish Research Council (March 2019 - September 2020) that carried on primary research on the topic and developed a simple database and web-based platform as well as hosting various heritage displays at venues.

Geological Mapping

Geological Survey Ireland's geological mapping programme creates maps that depict the rocks (Bedrock Mapping) and subsoils (Quaternary & Physiographic Mapping) of the onshore area of Ireland. We collect new data by field surveying and borehole drilling, and combine them with existing mapping to produce map products at various scales and levels of complexity. We maintain online data sets of bedrock and subsoils geological mapping that is reliable, accessible and meets the requirements of all users. These data sets include depth to bedrock data and subsoil classifications. **We would encourage you to use this data in any planned SEA reports and for informing your County Development Plan (2022-2028).**

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. **We recommend the use of our National Aquifer, Vulnerability and Recharge maps within the CDP. Further information is available on our Map viewer**.

With regard to Flood Risk Management, there is a need to identify areas for integrated mitigation and management. Our **GWFlood** project is a groundwater flood monitoring and mapping programme aimed at addressing the knowledge gaps surrounding groundwater flooding in Ireland. The project is providing the data and analysis tools required by local and national authorities to make scientifically-informed decisions regarding groundwater flooding**. This is primarily focused on karst areas such as those located in Co. Clare, which will provide vital information to benefit the CDP. We recommend using our GWFlood tools found under our programme activities (in conjunction with OPW data) to this end.**

With regards to Climate Change, there is a need to improve the monitoring capacity of groundwater levels in Ireland so that the potential impacts of climate change can be monitored and assessed. In this context the Geological Survey Ireland has established the GWClimate project in January 2020.

GWClimate will 1) establish a long-term strategic groundwater level monitoring network and 2) develop modelling and analytical approaches for evaluating the impacts of Climate Change to Irish groundwater systems. **Further information can be found on the Groundwater flooding page of the Groundwater Programme.**

Geohazards

Geohazards can cause widespread damage to landscapes, wildlife, human property and human life. While in Ireland, landslides are the most prevalent of these hazards flooding is becoming an increasing risk.

Geological Survey Ireland has information available on past landslides for viewing as a layer on our Map Viewer.

Geological Survey Ireland also engages in national projects such as Landslide Susceptibility Mapping and Groundwater Flooding (GWFlood), and in international projects, such as the Tsunami Warning System, coordinated by the Intergovernmental Oceanographic Commission of UNESCO. Historical records and geological evidence indicate that, while tsunamis are unlikely events around Ireland, the Irish coast is vulnerable to tsunamis from submarine landslides and distant earthquakes. Associated levels of coastal flooding are expected to be similar to those seen during storm surges, but with much more energetic inundation and a much shorter time to react. Ireland participates in an international tsunami detection and alerting system, coordinated by the Intergovernmental Oceanographic Commission of UNESCO. **We recommend that geohazards and particularly flooding be taken into consideration, especially when developing areas where these risks are prevalent, and we encourage the use of our data when doing so.** Coastal Vulnerability while seen as a potential geohazard, is discussed in more detail under our marine and coastal unit information below, and may be a useful dataset for the CDP.

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. **The Geothermal Suitability maps could also be considered in as part of the Renewable Energy Potential for the CDP.**

Ireland also has recognised potential for 'deep' (>400m) geothermal resources. Geological Survey Ireland currently supports and funds research into this national energy resource. Along with our partners in research and industry we have been investigating the potential for geothermal energy in Ireland. Although Ireland does not possess high temperature (high enthalpy) reserves such as those in Iceland or the Azores, we do have the potential to use our resources for low enthalpy application such as district heating and industrial processes that require heating/cooling. We are currently completing a roadmap for geothermal energy use in Ireland which we expect to publish in 2020. **For further information please see our geoenergy pages on our website or contact the Groundwater Programme of the Geological Survey Ireland directly.**

Natural Resources (Minerals/Aggregates)

We welcome the reference to mineral locations and aggregate potential in Section 3.7. These are important resources for the future, particularly in relation to the projected public developments, such as sustainable infrastructure development, roads, schools etc., and housing requirements for the County.

Geological Survey Ireland is 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 provides data, maps, interpretations and advice on matters related to minerals, their use and their development in our Minerals section of the website.

Aggregates are an essential natural resource for the construction industry and with the Government of Ireland "Building Ireland 2040" plan, understanding of aggregate source and supply will be important. The Active Quarries, Mineral Localities and the Aggregate Potential maps are available on our Map Viewer. We would welcome the consideration of aggregate potential sterilisation included as part of the scoping document.

Marine and Coastal Unit

Our marine environment is hugely important to our bio-economy, transport, tourism and recreational sectors. It is also an important indicator of the health of our planet. Geological Survey Ireland's Marine and Coastal Unit in partnership with the Marine Institute, jointly manages INFOMAR, Ireland's national marine mapping programme; providing key baseline data for Ireland's marine sector. The programme delivers a wide range of benefits to multi-sectoral end-users across the national blue economy with an emphasis on enabling our stakeholders.

Demonstrated applications for the use of INFOMAR's suite of mapping products include Shipping & Navigation, Fisheries Management, Aquaculture, Marine Leisure & Tourism and Coastal Behaviour. Of particular interest to tourism is the extensive database of shipwrecks mapped by the INFOMAR programme, many lost close to the coast and with engaging human interest stories associated with them https://www.infomar.ie/maps/story-maps/shipwrecks. INFOMAR also produces a wide variety of seabed mapping products that enable public and stakeholders to visualize Ireland's seafloor environment https://www.infomar.ie/maps/downloadable-maps/maps. Story maps have also been developed providing a different perspective of some of the bays and harbors of the Irish coastline https://www.infomar.ie/maps/story-maps/exploring-dingle-bay-different-perspective. **We would therefore recommend use of our Marine and Coastal Unit datasets available on our website and Map Viewer.**

The Marine and Coastal Unit also participate in coastal change projects such as CHERISH (Climate, Heritage and Environments of Reefs, Islands, and Headlands) and are undertaking mapping in areas such as coastal vulnerability and coastal erosion. Further information on these projects can be found **here**.

I hope that these comments are of assistance, and if we can be of any further help, please do not hesitate to contact me (Trish.Smullen@gsi.ie), or my colleague Clare Glanville (Clare.Glanville@gsi.ie).
Yours sincerely,

Trish Smullen
Geoheritage Programme
Geological Survey Ireland