Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhshaoil
Department of Communications,
Climate Action & Environment

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Administration Officer,
Forward Planning Policy Section,
Áras an Chontae,
Prospect Hill,
Galway.

06 July 2020

Re: Review of Galway CDP 2015-2021 and preparation of new Galway CDP 2022-2028
Your Ref: N/A
Our Ref: 20/126

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 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 Eileen,

With reference to your email received on 19 June 2020, concerning the Review of Galway CDP 2015-2021 and preparation of new Galway CDP 2022-2028, Geological Survey Ireland (a division of Department of Communications, Climate Action and Environment) welcome the opportunity to be included in the consultation process at this early review stage.

Geoheritage

The Geological heritage county audit was completed last year and launched in January 2020. GSI welcomes the mention of the County Geological Sites (CGSs) within the draft development plan. The 134 County Geological Sites play an important part in Galway's natural heritage and landscape and require protection and preservation from potential over development.

The following points are suggested by the Irish 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, GSI 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 IGH 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, with one aspiring Geopark, Joyce Country and Western Lakes Aspiring Geopark. The aim of the project is to develop a geopark in the area surrounding Joyce Country on the Galway-Mayo border, and Loughs Mask, Carra and Corrib, with the intention of applying for full UNESCO Global Geopark status in 2022. 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 Galway 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.

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 GSI's 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 Galway, which will provide vital information to benefit the CDP. We recommend using the GSI's GWFlood tools found under our programme activities 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 GSI 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.

We welcome consideration of use of Geological Survey Ireland's online mapping data sets for Landslide Events and Landslide Susceptibility to identify areas at risk in the CDP. We would also highly recommend the use of Geological Survey Ireland's Bedrock geology, Groundwater and GWFlood data sets to identify potential structural failures in Karst areas.

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 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**.

Marine and Coastal Unit

Geological Survey Ireland's Marine and Coastal Unit manages programmes, projects and partnerships aimed at increasing our knowledge of the marine and coastal realm, developing new methods and tools for understanding coastal processes and taking action on climate change. Geological Survey Ireland's Marine and Coastal Unit in partnership with the Marine Institute, jointly manages INFOMAR, Ireland's national programme focused on seabed mapping; providing key baseline data for Ireland's marine sector. **The Marine and Coastal Unit also manage coastal monitoring programmes providing data on coastal erosion and sea level rise including the Climate, Heritage and Environments of Reefs, Islands and Headlands (CHERISH) and the Coastal Vulnerability Index (CVI) mapping projects. We would therefore recommend use of our Marine and Coastal Unit datasets available on our website and Map Viewer.**

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,

[redacted]

Geoheritage Programme
Geological Survey Ireland