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

Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

Tellus Survey 2017 - Frequently Asked Questions:

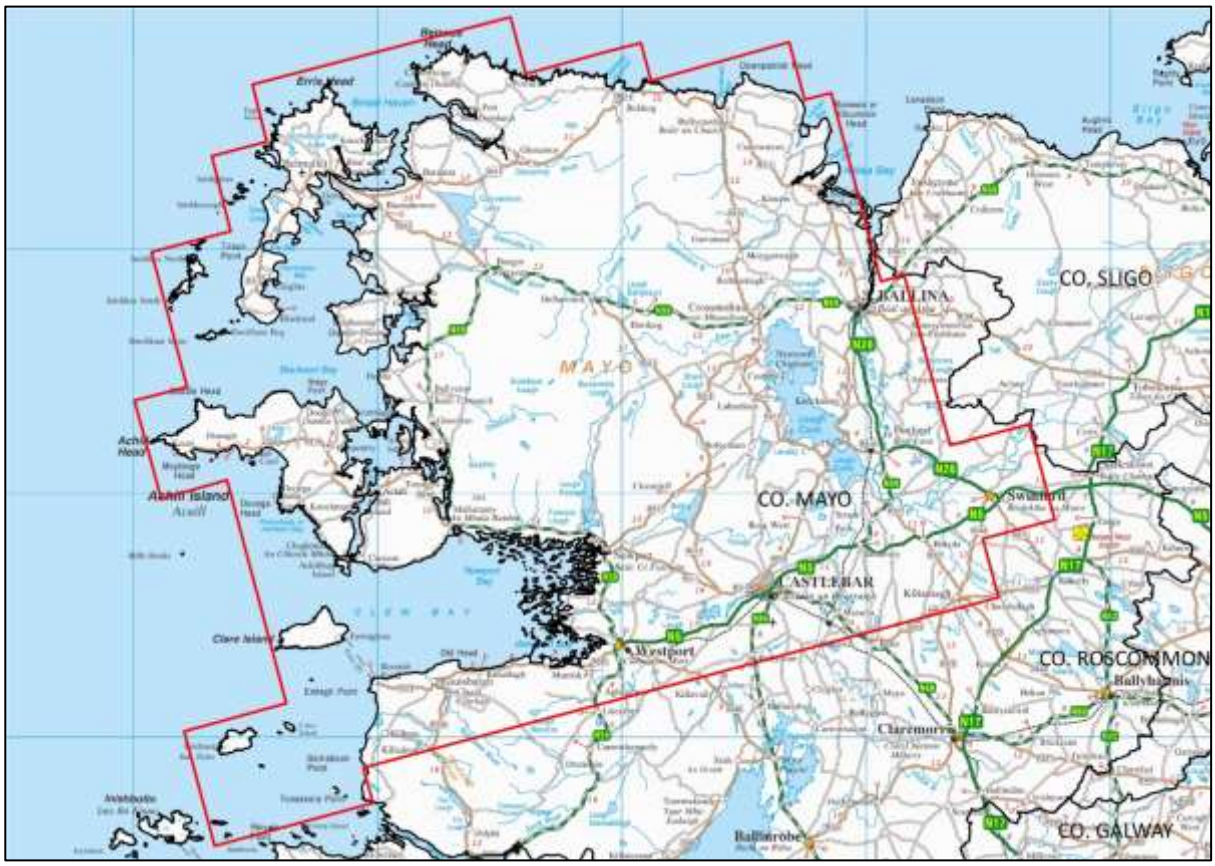
1. What is Tellus?

Tellus is a ground and airborne geoscience mapping programme, collecting chemical and geophysical data that will inform the management of Ireland's environment and natural resources. The project, run by the Geological Survey Ireland, involves a low-flying survey aircraft and a ground-based sampling programme. New data will be joined with maps already available from these existing Tellus surveys and will be made available free of charge.

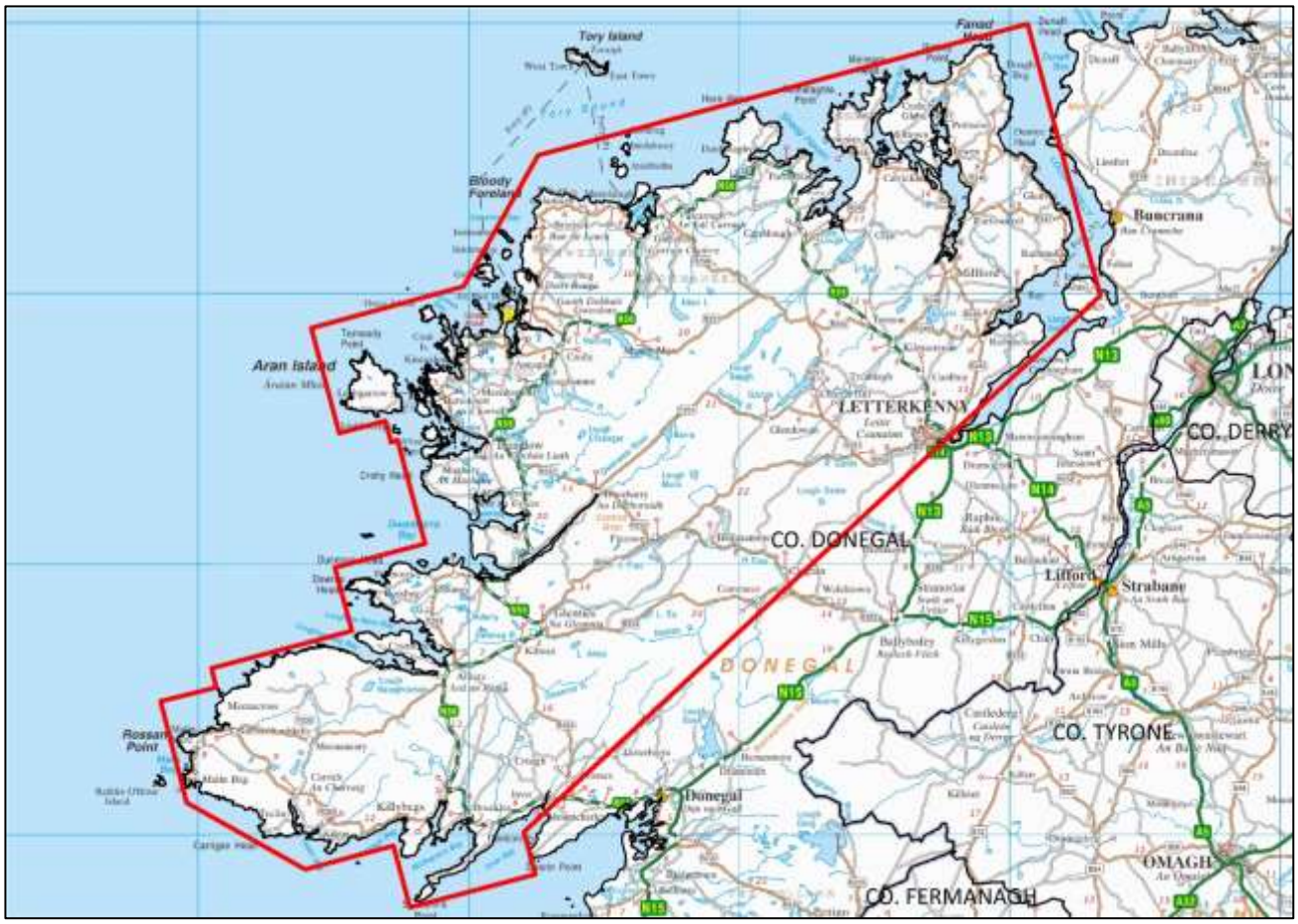
2. Where is the survey underway?

Geophysical: The upcoming phase of the airborne survey will cover County Mayo and western County Donegal. The survey is set to commence early March and continue for approximately 7 months, weather permitting.

County Mayo Survey Area, below:

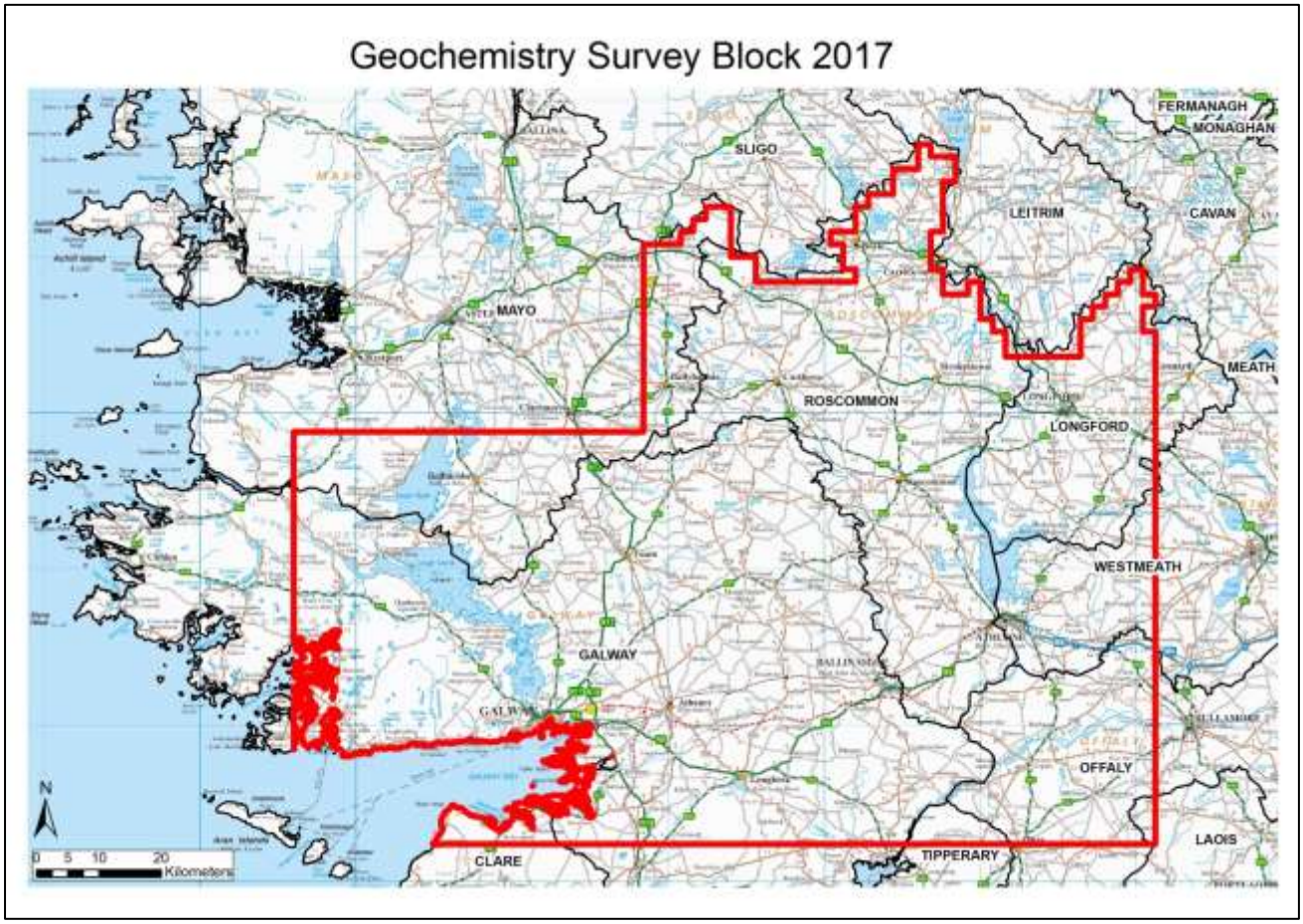


County Donegal Survey Area, below:



Geochemical: The upcoming phase of the geochemical survey will commence across County Galway, County Roscommon and parts of the Midlands of Ireland from May 2017 through to autumn 2017. It will involve ground sampling teams collecting soil and stream samples in the area.

Geochemistry Survey Area for 2017, below:



3. Why do we need to do this survey?

The survey will give a comprehensive picture of the environment in the region today. This will help us sustainably manage the environment, natural resources and protect public health in the future. Previous Tellus surveys have:

- Provided improved data for the GSI to update geological maps for planning and research purposes
- Provided new data to improve radon risk mapping
- Assisted mineral exploration companies to invest locally
- Facilitated new third-level research on environmental pollution, agricultural productivity, peat and wetlands.

4. Where does the name "Tellus" come from?

In Roman mythology, Tellus was the goddess of the Earth.

5. Is Tellus anything to do with…

i. Mineral exploration?

Tellus isn't engaged in commercial mineral exploration. The data collected will be impartial and freely available to all, including mineral exploration companies who may use the data to assist their exploration programmes and regulators responsible for permitting such activities. The data is likely to highlight areas which would be of interest to mineral exploration companies for further investigation, but the data alone cannot indicate where economic mineral deposits are present. Previous Tellus surveys have stimulated considerable investment into local economies from mineral exploration companies who use the data as part of their exploration programmes.

ii. Fracking?

Tellus isn't involved with the current shale gas or unconventional hydrocarbons hydraulic fracturing (or 'fracking') licensing or exploration in the region. The data collected will be impartial and freely available to all, including petroleum and mineral companies who may use the data to better understand the geology and assist their exploration programmes, researchers studying the possible effects of shale gas extraction on the environment, environmental groups, and regulators responsible for permitting such activities.

iii. Radon gas?

The rocks and soils across Ireland can naturally contain minerals which are radioactive and are a source of radon gas. The airborne survey will measure and map a range of radiogenic elements at a high resolution, and the data are used to map areas of potential radon gas risk. Research into this is being carried out in conjunction with the Office of Radiological Protection, part of the Environmental Protection Agency.

iv. Bog conservation/turf cutting?

Tellus collects data on the land and surface environment including areas covered by peat; however the project is not involved with the selection of bogs for conservation or the cessation of turf cutting. Previously research has been carried out using Tellus data in the border region on peat bogs to assess how much carbon is stored in peat and variation in peat deposit thickness.

v. Wind turbines?

Tellus is not involved with wind turbines.

vi. Pylons?

Tellus is not involved with electricity pylons.

vii. Septic tank inspections?

Tellus is not involved with septic tank inspections.

viii. Water meters?

Tellus is not involved with installing or inspecting water meters or pipes.

6. What type of aircraft is being used in the airborne survey?

The aircraft is a de Havilland Twin Otter plane operated by the specialist survey company, Sander Geophysics Ltd, based in Canada. The white, twin propeller plane has a red tail, black stripe, and registration number C-GSGF.

7. At what height and speed will the survey aircraft fly? Why does it have to fly at a low altitude?

The aircraft flies at a safe height and is authorised by the Irish Aviation Authority. In rural areas this will be 60 m – about 8 times the height of a two storey house. In urban areas the height will be 240m. It flies at a low altitude because the instruments on board the plane can sense the properties of soil and rocks more accurately at a low altitude. The speed of the aircraft is about 130 mph, and the sound of the aircraft passing overhead is similar to that of a passing lorry.

8. What equipment is the plane carrying? What do they measure, and are they dangerous?

The aircraft will carry a range of instruments for navigation and for measuring geophysical properties of the ground. The navigation instruments carried on the aircraft include:

- A satellite navigation system;
- A radar altimeter for measuring altitude; and
- A video camera, which gives us a record of where the plane has flown. The video footage will not be used for any other purpose.

The geophysical instruments on board the plane comprise:

- A magnetometer which measures variations in the Earth's magnetic field; mounted in a rod on the back of the plane.
- A gamma ray detector which measures the natural radioactivity of shallow soil and rocks; housed inside the plane.
- A frequency-domain electromagnetic (EM) system which measures variations in conductivity between different soils and rock; mounted in pods at the end of each wing.

The EM system is the only instrument which sends out a signal to the earth. The EM system on one wing pod sends a very weak signal, equivalent to the power of a light bulb, into the ground. A receiver in the other wing pod will measure small changes in this signal as it passes through different types of rocks and soil. The other instruments are passive — they don't emit any signals.

9. Where and how will the soil samples for the geochemical survey be taken? What will the samples be analysed for?

Soil samples will be taken by teams of trained samplers, normally working in teams of two. Samples are collected using a hand tool only called an auger. They will collect two samples, one at 20 cm deep and one at 50 cm deep, with approximately 1 kg of soil will be taken from each depth — a similar weight and volume to that of a bag of sugar. The soil samples are taken from rural areas such as farmland, open areas and woodland. The locations are quite randomly distributed to ensure we collect a representative sample of the general area, so no individual landowners are targeted.

One soil site will typically be sampled every 4 km² which is about 1 sample per 400 hectares or approximately 1000 acres. Across Ireland, there will eventually be over 25,000 soil sample sites visited.

The samples will be analysed to find the concentrations of a range of chemical elements. The results will be useful for assessing the health of the environment, agricultural nutrients and trace elements, and signatures of the underlying rock chemistry. The results aren't intended to provide information on individual landholdings however we are happy to provide results that have been requested on the day of sampling.

10.Will my land be visited during the ground sampling survey?

Sampling teams will have high visibility clothing, vehicles, and ID cards. The sampling is conducted by OCAE consultants on behalf of the Tellus project. If you are still concerned about the identity of the teams you can call the free information line on 1800 303 516 for verification.

11.Who is doing the work?

The project is funded by the Department of Communications, Climate Action and Environment (DCCAE). The project is being managed by the Geological Survey Ireland which is a line division of the DCCAE. The survey work will be undertaken by qualified, highly specialised and experienced contractors on behalf of the Geological Survey Ireland. Airborne surveying is carried out by Sander Geophysics.

12.Where can I get more information?

You can contact us by email, phone or through our website to get more information on Tellus.

Freephone 1800 303 516
Email tellus@gsi.ie
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