

# **DUBLIN SURGE PROJECT**

## **DATA RELEASE NOTE**

# **GEOCHEMICAL BASELINE FOR HEAVY METALS AND ORGANIC POLLUTANTS IN TOPSOILS IN THE GREATER DUBLIN AREA**

**April 2024**

## **1. SURGE Project**

Geological Survey Ireland is pleased to announce the digital re-release of the Dublin Soil Urban Geochemistry (SURGE) project data. The project was completed by Geological Survey Ireland and the Norwegian Geological Survey (NGU) in 2009-2011. Since 2011 the data has been available under license only; this data is now freely and openly available on Geological Survey Ireland's [SURGE map viewer](#).

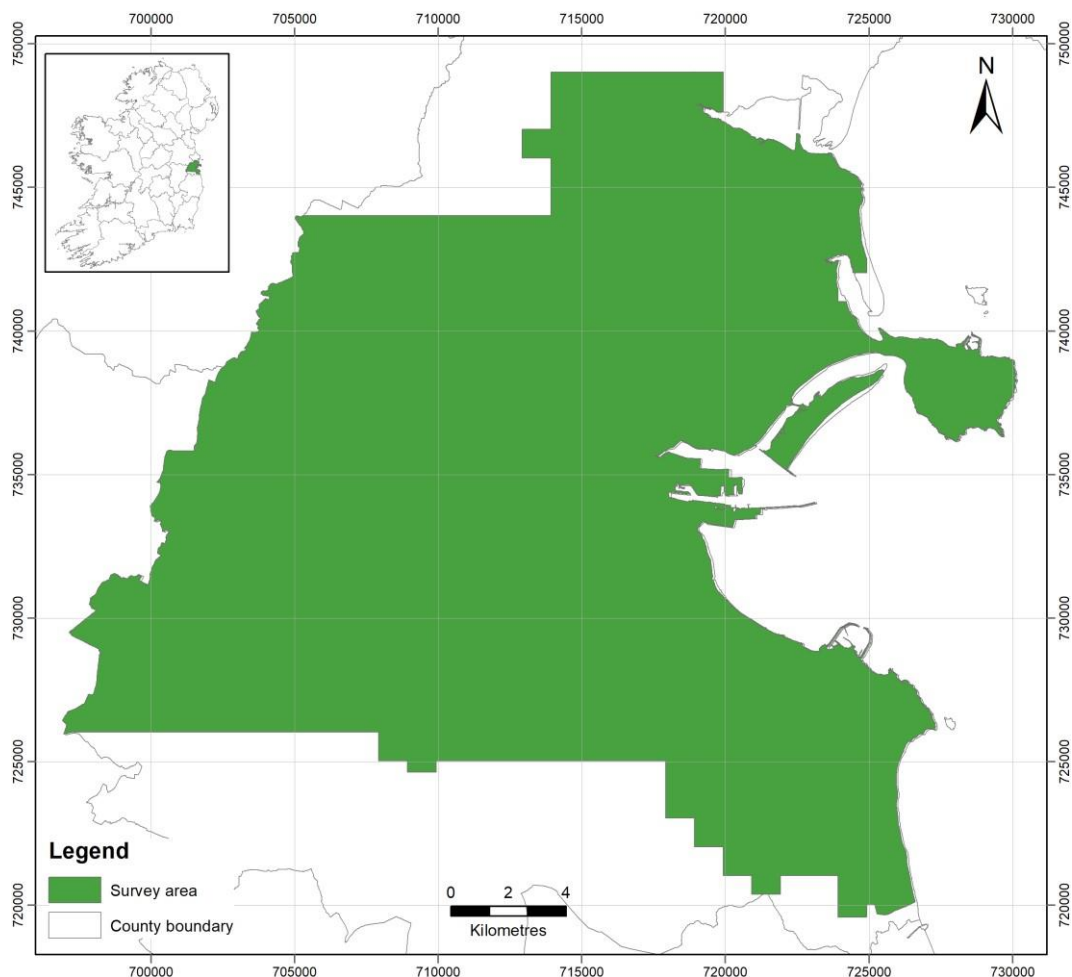
The study provides a snapshot of the chemical status of Dublin soil relevant to environmental assessment, soil policy, land-use planning and compliance with environmental legislation and land-use planning. The project report and peer-reviewed journal article can be viewed on the [SURGE web pages](#). Linked to a specially commissioned study on Dublin's historical industry, results show that the soils of inner city Dublin have higher levels of potentially harmful elements (in particular metals) and persistent organic pollutants (PAHs and PCBs) than outer city areas. This chemical pattern is one which is seen in cities around the world, and is consistent with historical and modern urban human activities.

A total of 1058 samples were taken in topsoil (0-10 cm depth) in the greater Dublin area in October and November 2009 (Maps 1 and 2). Sample locations were chosen based on a stratified random scheme, whereby 4 samples were taken within every 1 km<sup>2</sup>. All samples were analysed for 31 inorganic elements including heavy metals. In addition, a subset of 194 samples were also analysed for persistent organic pollutants (Polycyclic aromatic hydrocarbons (PAHs) and Polychlorinated bipheyls (PCBs)).

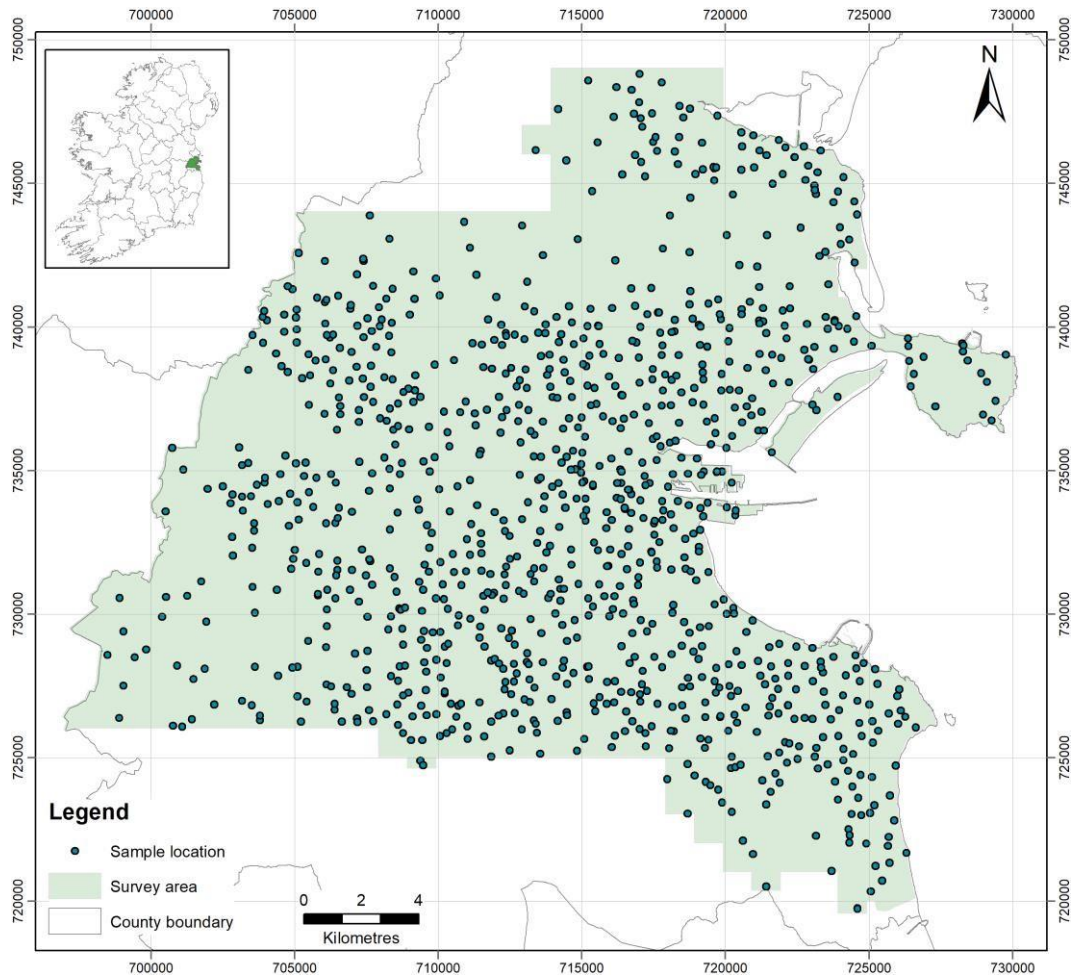
The topsoil samples chemically analysed by several methods:

- Inorganic analysis completed by HNO<sub>3</sub> digestion, with inductively coupled plasma atomic emission spectrometry (ICP-AES) and cold-vapor atomic absorption spectrometer (CV-AAS) for Mercury (Hg). □ Soil loss-on-ignition at 480°C.
- Organic pollutants were extracted using a 1:1 volume mixture of acetone and nhexane and determined using gas chromatography – mass spectrometry (GCMS) for 16 PAH compounds, and gas chromatography – electron capture detector (GC-ECD) for the 7 PCB congeners.

In addition, results from a commissioned survey of Dublin’s industrial history are also available for download. 1,885 sites of potentially polluting industries were identified from historical Ordnance Survey maps and existing industrial heritage datasets from local authorities. The full report can be accessed on the [Dublin Historic Industry Database page](#).



**Map 1. Extent of the Dublin SURGE Project survey area.**



**Map 2. Shallow topsoil sample locations in survey area.**

## 2. URLs FOR MAP VIEWER AND DATA DOWNLOAD

Data and supporting documentation may be viewed and downloaded from the GSI website at the following URLs:

**SURGE Map viewer:**

<https://dcnr.maps.arcgis.com/apps/webappviewer/index.html?id=b8576fe6fca43058953573dbbd71f25>

**SURGE Technical Report:**

[https://gsi.geodata.gov.ie/downloads/Geochemistry/Reports/IE\\_GSI\\_Soil\\_Urban\\_Geochemistry\\_SURGE\\_Dublin\\_Report.pdf](https://gsi.geodata.gov.ie/downloads/Geochemistry/Reports/IE_GSI_Soil_Urban_Geochemistry_SURGE_Dublin_Report.pdf)

**SURGE Data package:**

[https://gsi.geodata.gov.ie/downloads/Geochemistry/Data/IE\\_GSI\\_Soil\\_Urban\\_Geochemistry\\_SURGE\\_Dublin\\_IE26\\_ITM.zip](https://gsi.geodata.gov.ie/downloads/Geochemistry/Data/IE_GSI_Soil_Urban_Geochemistry_SURGE_Dublin_IE26_ITM.zip)

**Dublin Historic Industry Database Report:**

[https://gsi.geodata.gov.ie/downloads/Geochemistry/Reports/IE\\_GSI\\_Dublin\\_Historic\\_Industry\\_Database\\_Report.pdf](https://gsi.geodata.gov.ie/downloads/Geochemistry/Reports/IE_GSI_Dublin_Historic_Industry_Database_Report.pdf)

**Dublin Historic Industry Database Data package:**

[https://gsi.geodata.gov.ie/downloads/Geochemistry/Data/IE\\_GSI\\_Dublin\\_Historic\\_Industry\\_Survey.zip](https://gsi.geodata.gov.ie/downloads/Geochemistry/Data/IE_GSI_Dublin_Historic_Industry_Survey.zip)

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