

File Note

Project title	Characterisation of Calp Limestone in Dublin City Centre
Job number	297502-00
File reference	
cc	Marie Fleming
Prepared by	Simon Kelly
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Subject	Cover sheet of 3D subsurface model

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1. Introduction

A three-dimensional subsurface geological ground model of Dublin City Centre has been produced by Arup using the Seequent Leapfrog Works® geological modelling software as part of Transport Infrastructure Ireland's Optional Research Call for 2023 Lot 2 project, titled "Characterisation of Calp Limestone in Dublin City". Background to this project, including the geological setting, modelling methodology, and analysis, is discussed in the main project summary report provided separately.

This file note summarises the final output subsurface geological model output, including a guide to the Seequent Central® sharing platform functionality.

2. Seequent Leapfrog® Central

Following development in the Seequent Leapfrog Works® geological modelling software, the subsurface geological ground model of the Calp Limestone within Dublin City Centre has been shared publicly via the Seequent Central® online cloud platform. The ground model produced as part of this project can be found through the following link:

<https://publicscenes.seequent.com/43014278-947d-4ecc-8307-ceef0ae4ca64>

The Seequent Central® cloud platform allows for the viewing, tracking, and management of geoscience data, including subsurface geological ground models.

3. Calp Limestone geological model

The subsurface geological ground model produced consists of overburden soils underlain by weathered bedrock underlain by intact Calp Limestone bedrock as encountered in publicly available geological boreholes across the study area. The model topography is based on publicly available a Digital Elevation Model (DEM). Intrusive borehole locations which allowed for model interpolation are also included. The geological model available via Seequent Central® is presented in **Figure 1** below.

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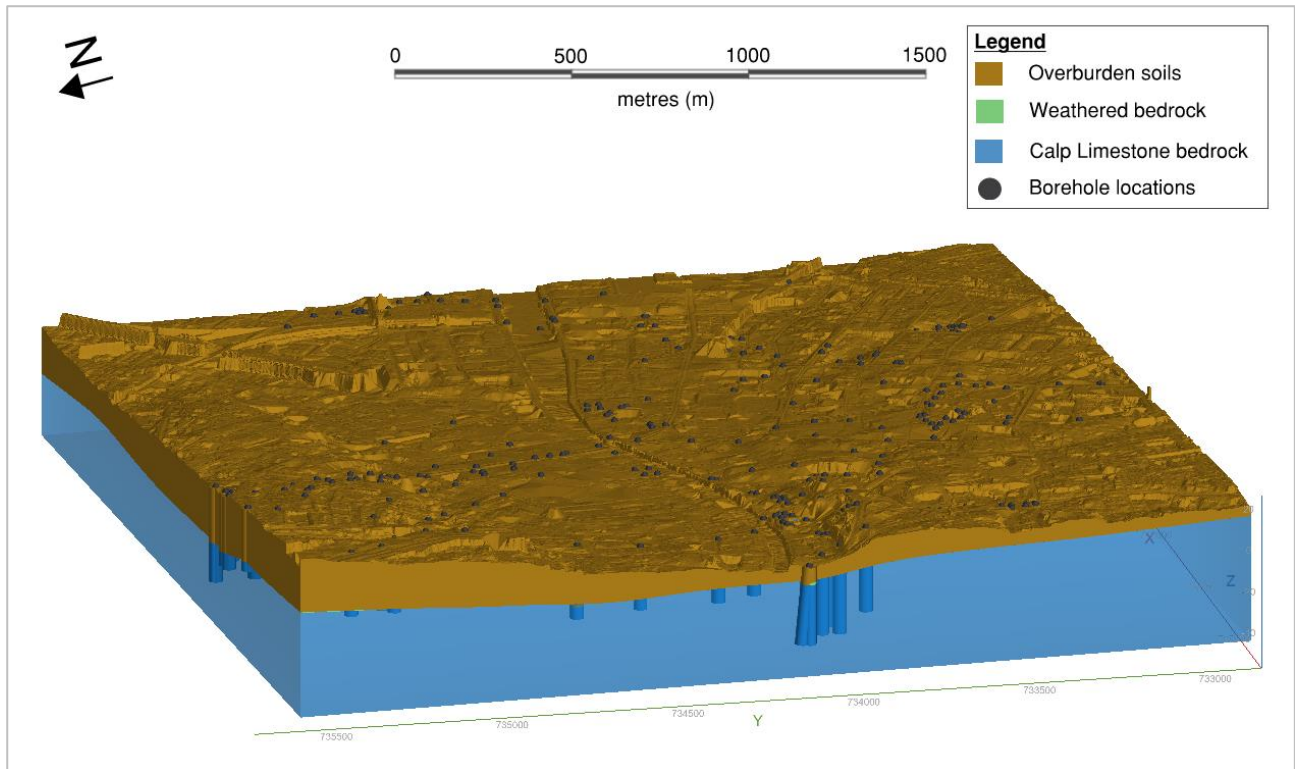


Figure 1: Geological ground model of Dublin City Centre produced as part of the TII Open Research Call for 2023 Lot 2 "Characterisation of Calp Limestone in Dublin City Centre" project. Ground model available to view via the Seequent Central® online cloud platform.

4. Model functionality

The Seequent Central® online cloud platform allows for navigation of the geological model produced through rotation, pan, and zoom functions. Distances can be measured by using the Measure function.

A key feature of the Seequent Central® platform is the Slice function, which allows for cross sections of the geological model to be created. A slice can be drawn in any orientation through the geological model to create a default two-dimensional cross section. Different Slice Options are available to display different portions of the model. The transparency of the Calp Limestone layer has been increased to allow the underlying borehole stick logs to be visible during slicing.

Slice parameters can be altered to create different cross sections of the model, including Slice width, Step size, Dip, and Dip azimuth. It is recommended that the Dip parameter is set to 90° to view a vertical cross section of the slice. The scroll bar at the top of the Slice Parameters pop-up can be used to navigate the slice through the three-dimensional ground model whilst keeping the other Slice Parameters constant.

An example of a two-dimensional cross section created via the Slice function is shown in **Figure 2** below.

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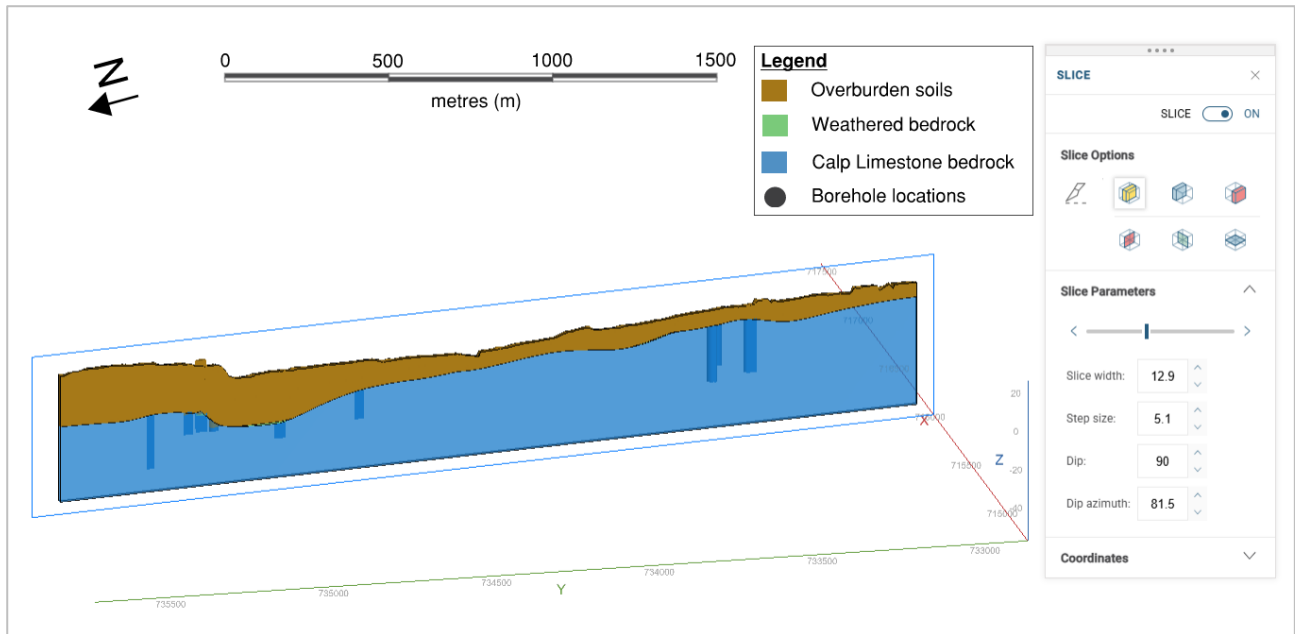


Figure 2: An example two-dimensional cross section of the Calp Limestone geological model using the Slice feature in Seequent Central®.