

## Faculty of Engineering

### Summer Research Program 2024-2025

Project Title: Sustainability of underground infrastructure –Digitalisation-based carbon assessment and baseline

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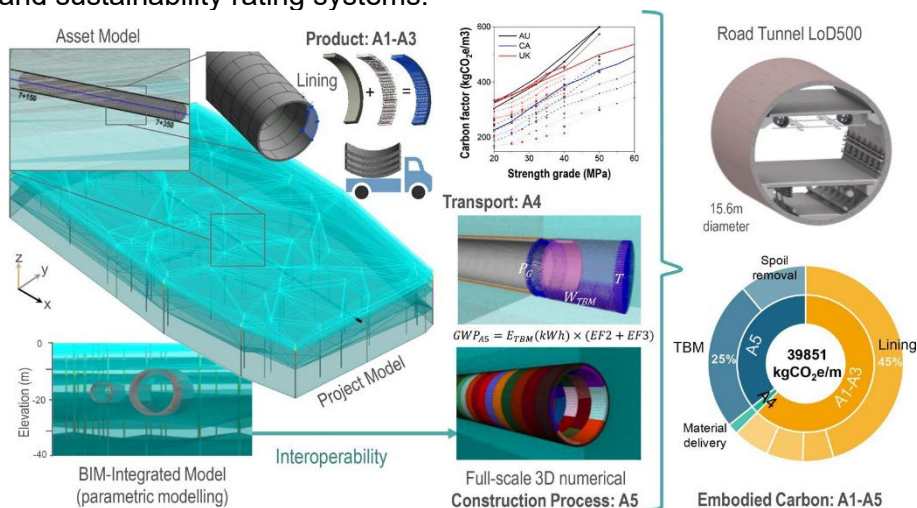
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### Objective

Alongside the transition towards sustainable and renewable infrastructure and energy production, tunnelling projects that adopt tunnel boring machines (TBM) continue to increase in size and complexity. Life Cycle Assessment (LCA) methodologies have a significant impact on the Architecture, Engineering and Construction (AEC) industry, with a shift in focus to cost and carbon management across the infrastructure lifecycle through the use of digitalisation techniques and sustainability rating systems.



### Project Details

This project aims to develop a systematic framework to enhance the sustainability of underground infrastructure in the early design and construction stages, aiming for “build clever and efficiently”. This framework will integrate digitalisation, carbon assessment standards, numerical modelling, and optimisation techniques to assess carbon emissions and establish benchmarks for construction products and processes.

### Prerequisites

Rhino or Revit software experience is highly recommended before the project.