Electric Vehicle Charging Infrastructure

Where should it be placed?

10th September 2024

Chris Emberson

GeoData, University of Southampton

University of Southampton

Image courtesy of https://www.autoexpress.co.uk/

The CoiL project – exploratory funding

- **C**harging p**OI**nt **L**ocations (CoiL) – c. 12 weeks of exploratory work
- TfSE as initial external partner
- Objectives
  - Collaborate and develop external stakeholders
  - Explore data gaps – to help pinpoint locations
  - Case study locations
  - Formulate a broader research proposal
- Supporting MSc dissertation topic (study area = Southampton)

University of Southampton

The ELECTRO project – broader research

- **ELE**ctric **C**harging **T**echnology **R**esource **O**ptimization (ELECTRO) – 18 months of detailed research

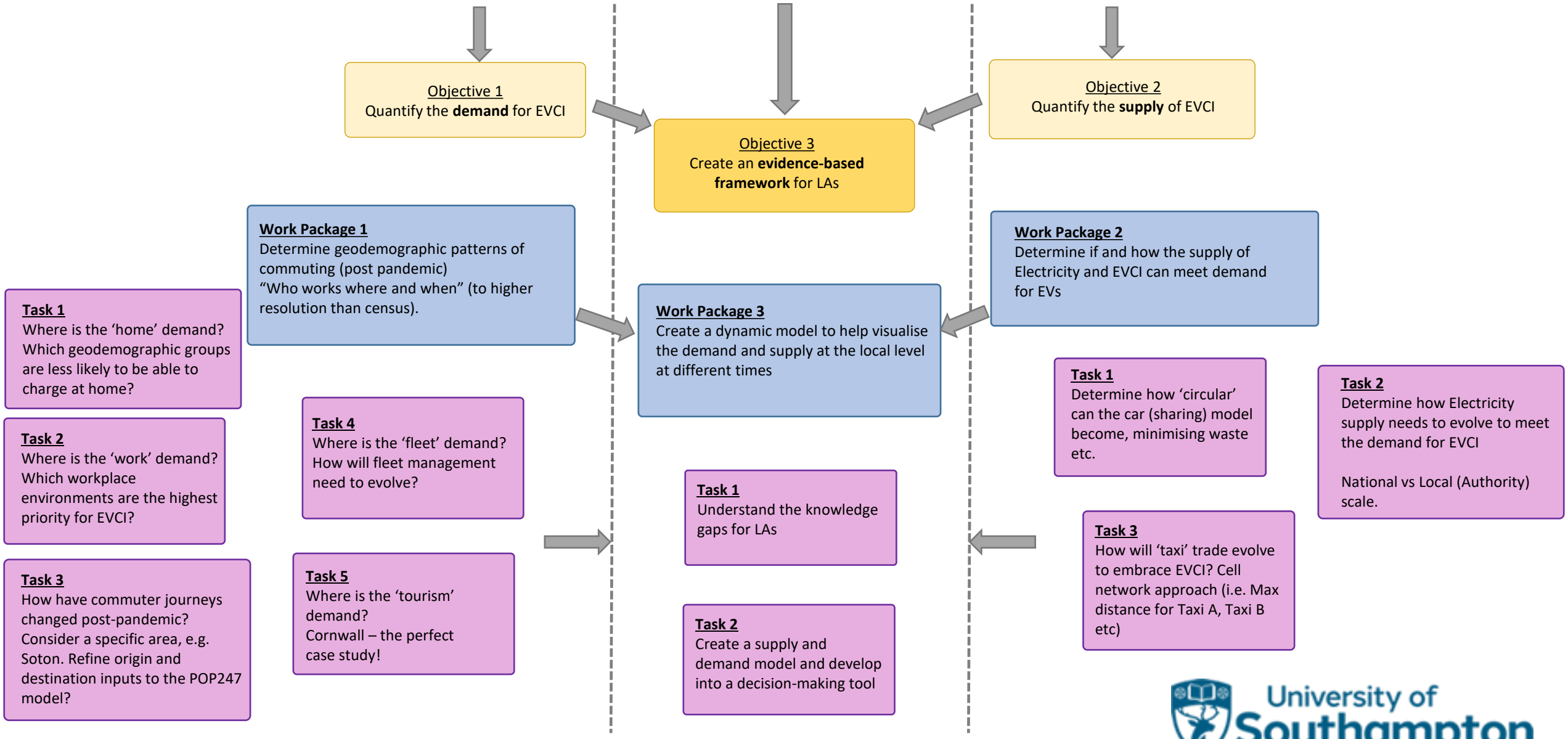
- TfSE, TfN, OS, Southampton City Council, Brighton and Hove City Council as external partners
- Mathematics, Computer Science, Geography as internal project partners

- Objectives

  - Close data gaps – pinpoint locations for EVCI
  - Case study locations
  - Provide answers to the supply and demand problem

University of Southampton

Electric Vehicle Charging Infrastructure – Where should it be placed?



University of Southampton

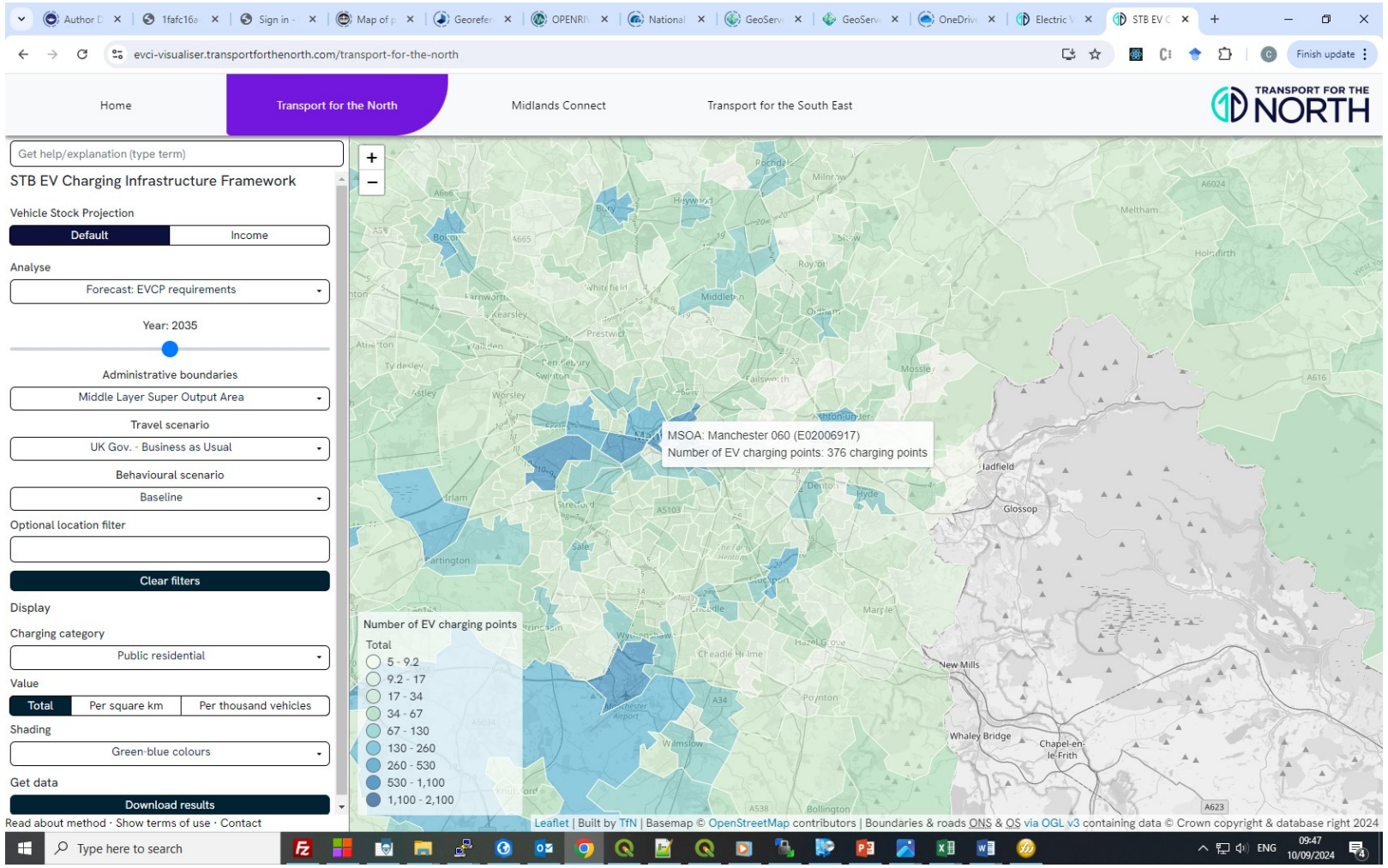
Data gaps

- Beyond MSOA (https://evci-visualiser.transportforthenorth.com/)
- Modelled population movement (http://pop247.geodata.soton.ac.uk/)
- Consumer Demographics (Output Area Classification)
- AI-driven simulations to model electricity supply in areas where it will be needed most –

  Future **E**lectric **V**ehicle **E**nergy networks supporting **R**enewables (**FEVER**)
  https://www.southampton.ac.uk/research/projects/future-electric-vehicle-energy-networks-supporting-renewables-fever
- Enhanced pavement attributes in OS MasterMap (width)

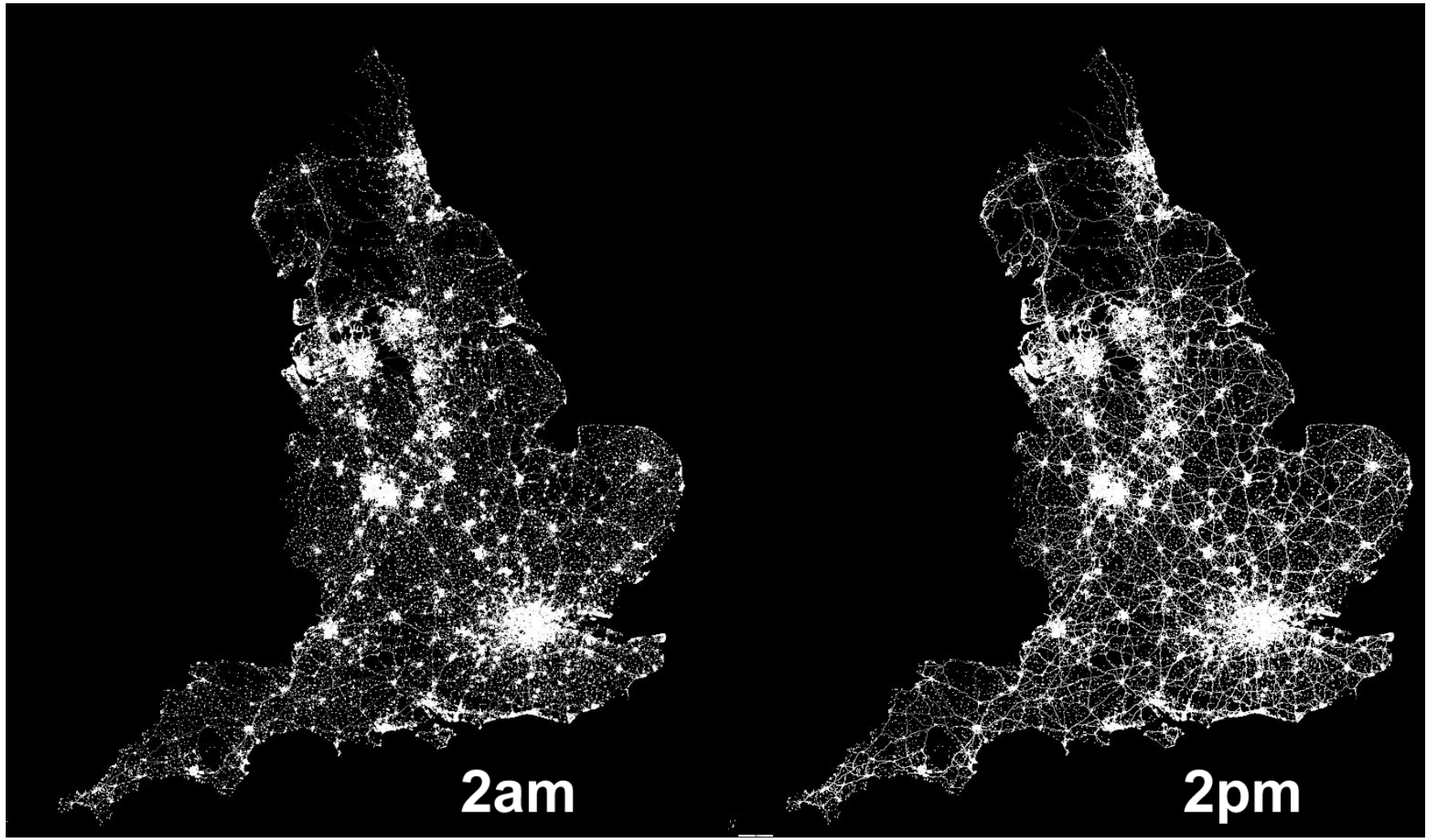
University of Southampton

Beyond MSOA (https://evci-visualiser.transportforthenorth.com/)

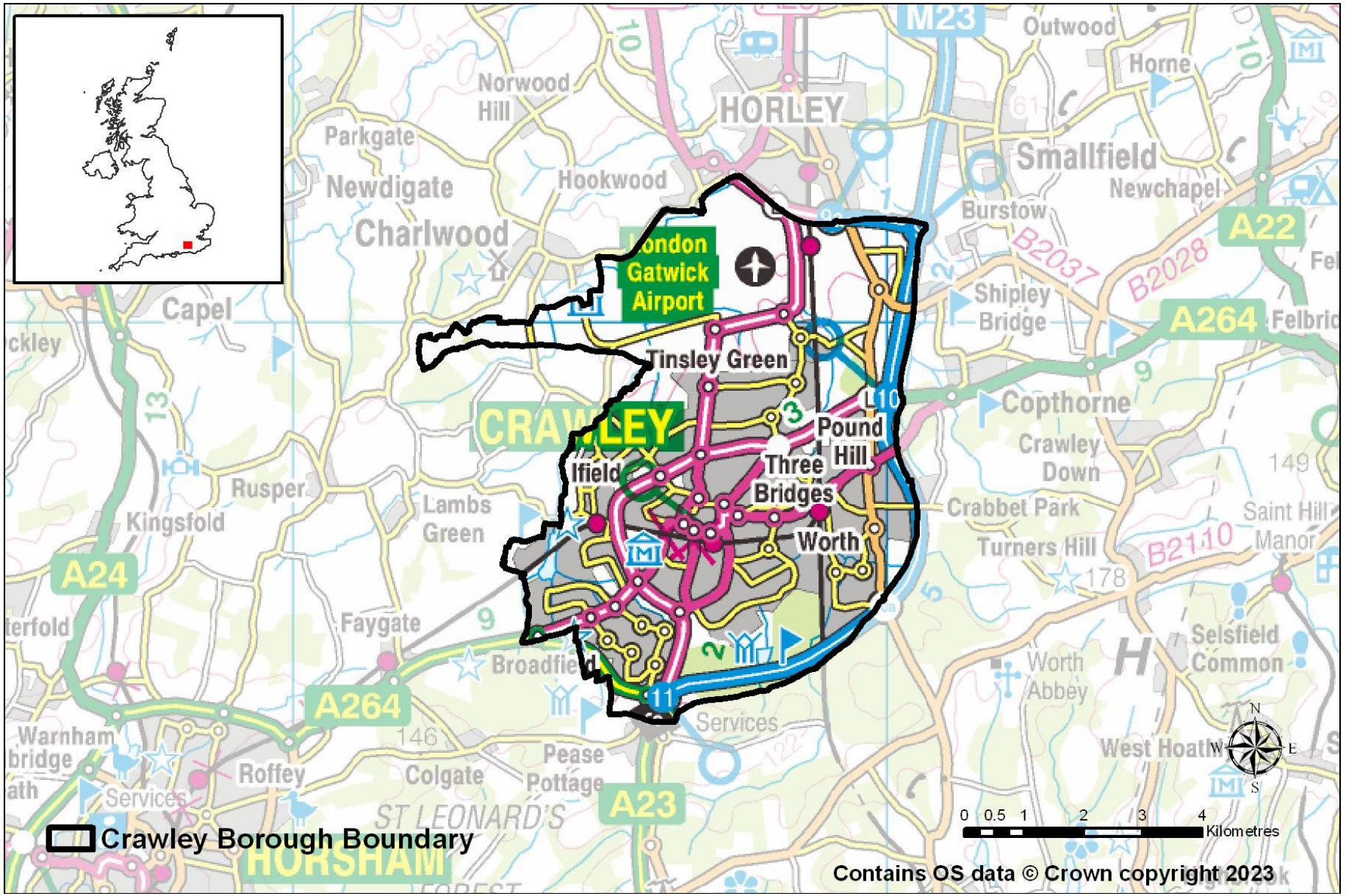


University of Southampton

Data gaps (http://pop247.geodata.soton.ac.uk/)



University of Southampton

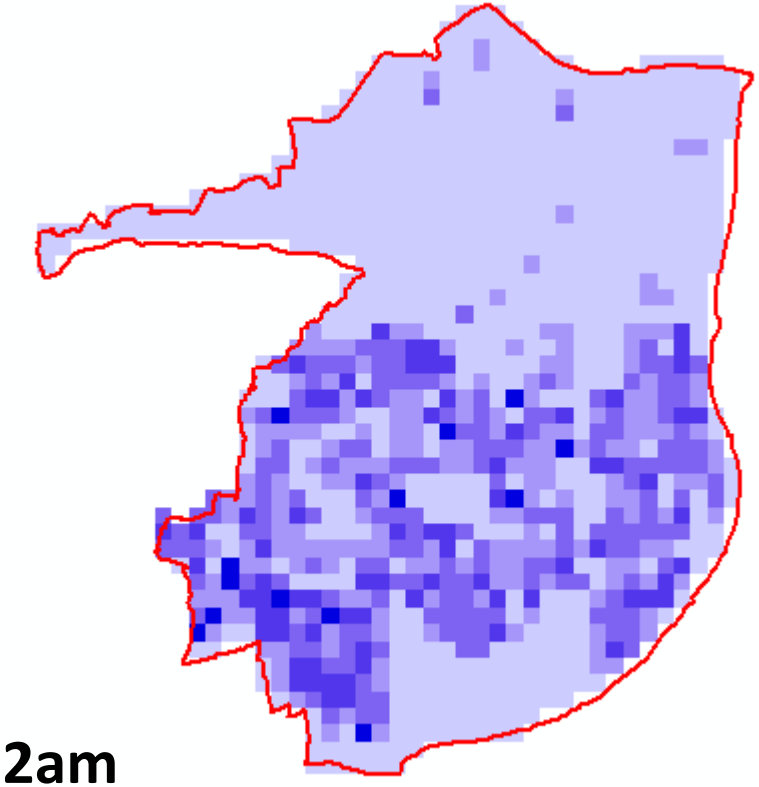


University of Southampton

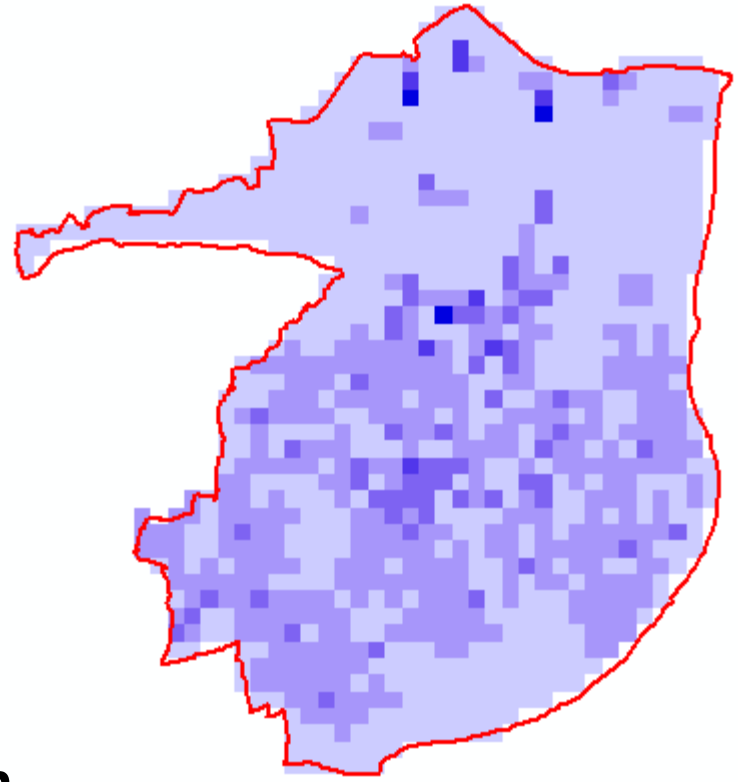
Case Study Locations – Crawley

Cell size = 200m x 200m

Crawley

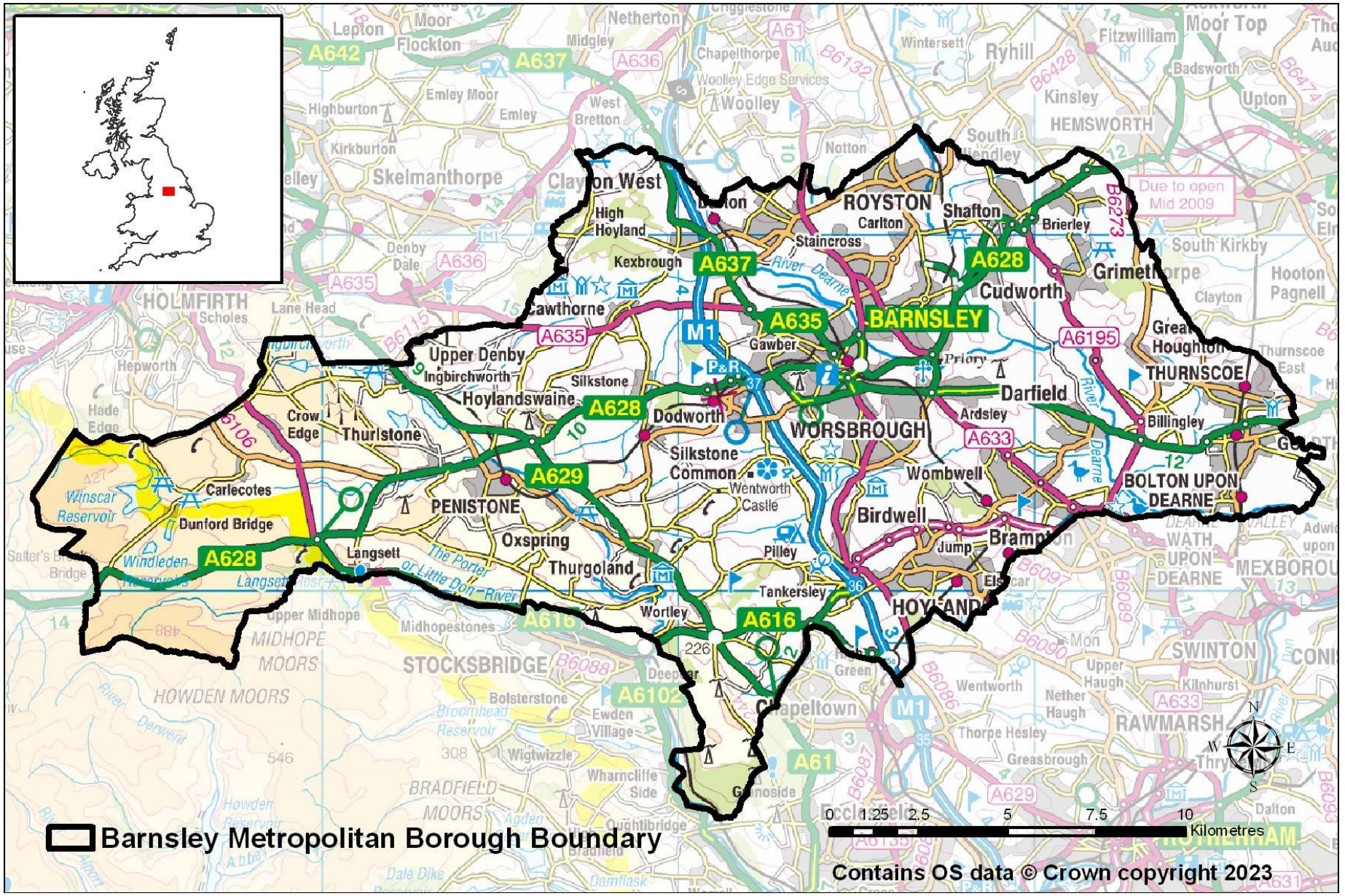


2am



2pm

University of Southampton

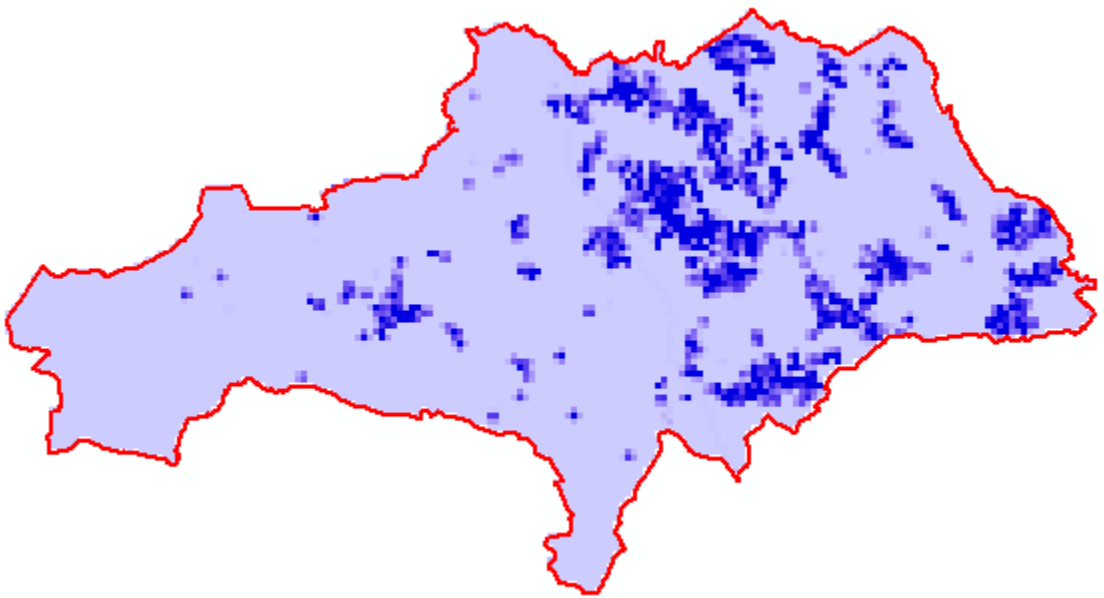


University of Southampton

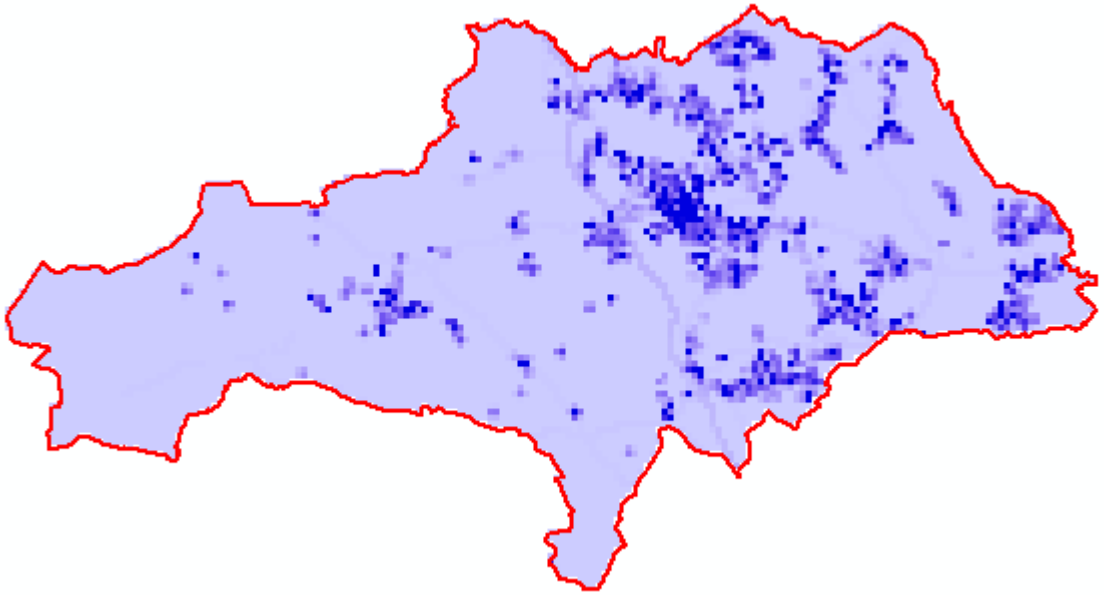
Case Study Locations – Barnsley

Cell size = 200m x 200m

Barnsley



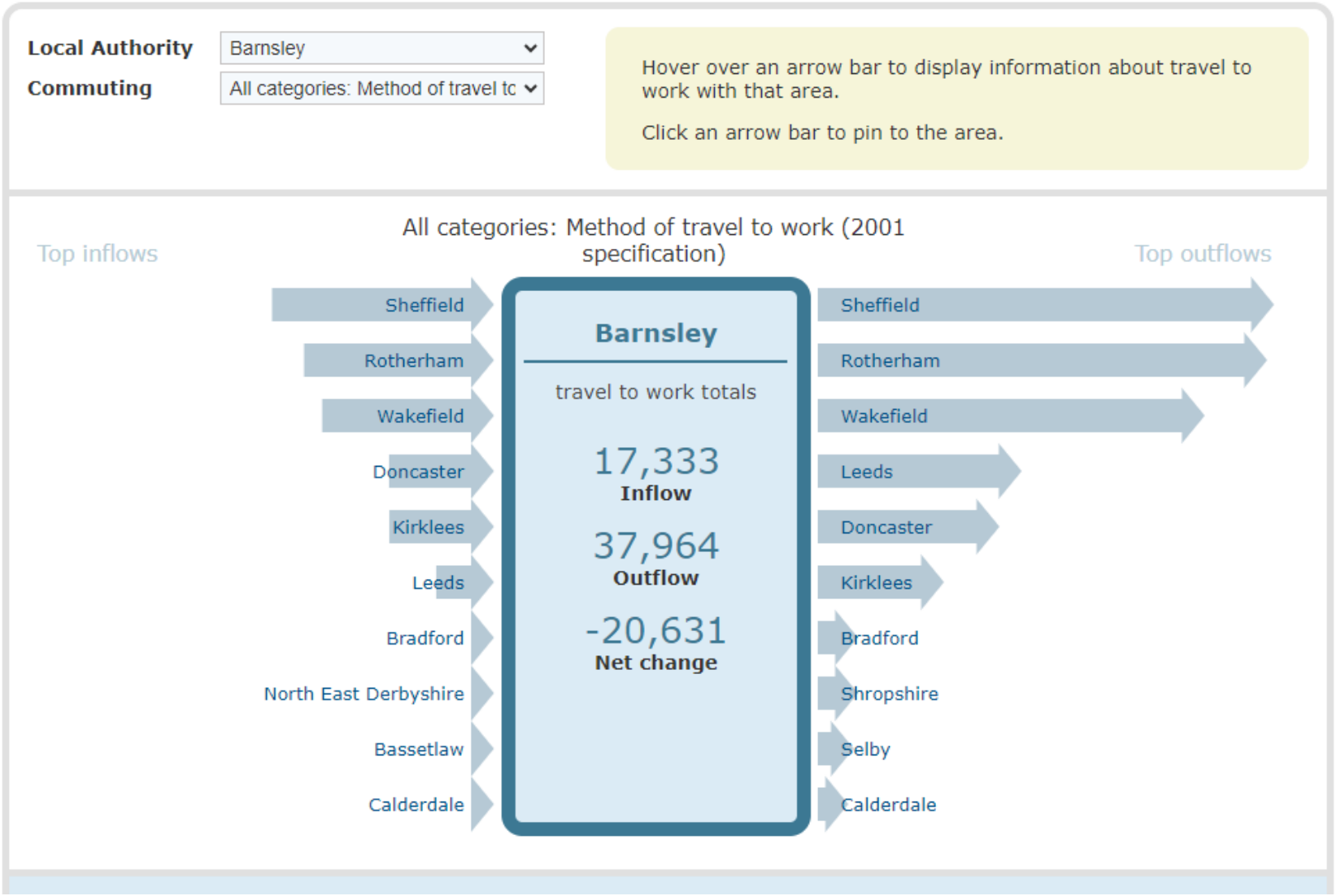
2am



2pm

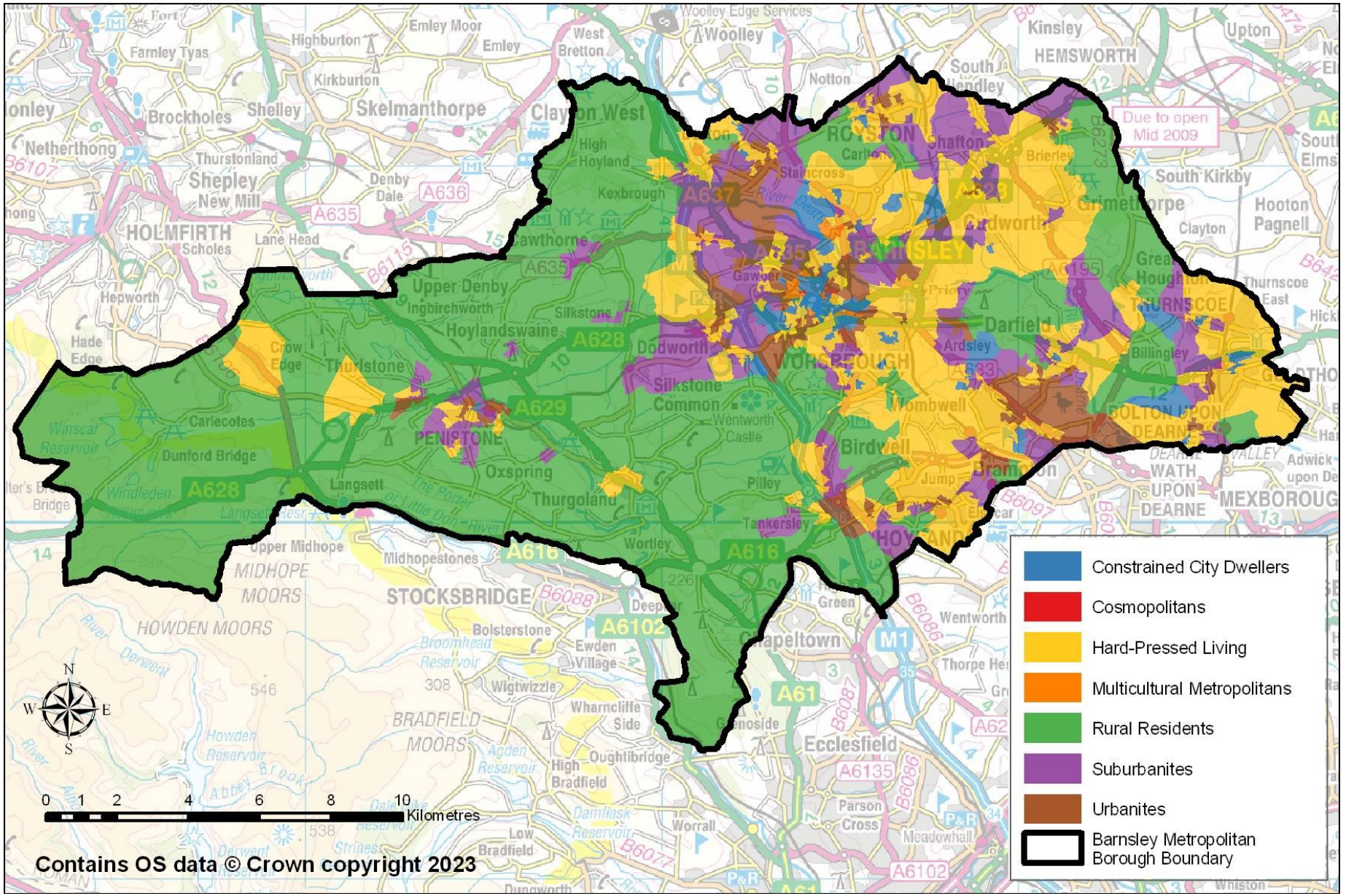
University of Southampton

Location of usual residence and place of work by method of travel to work

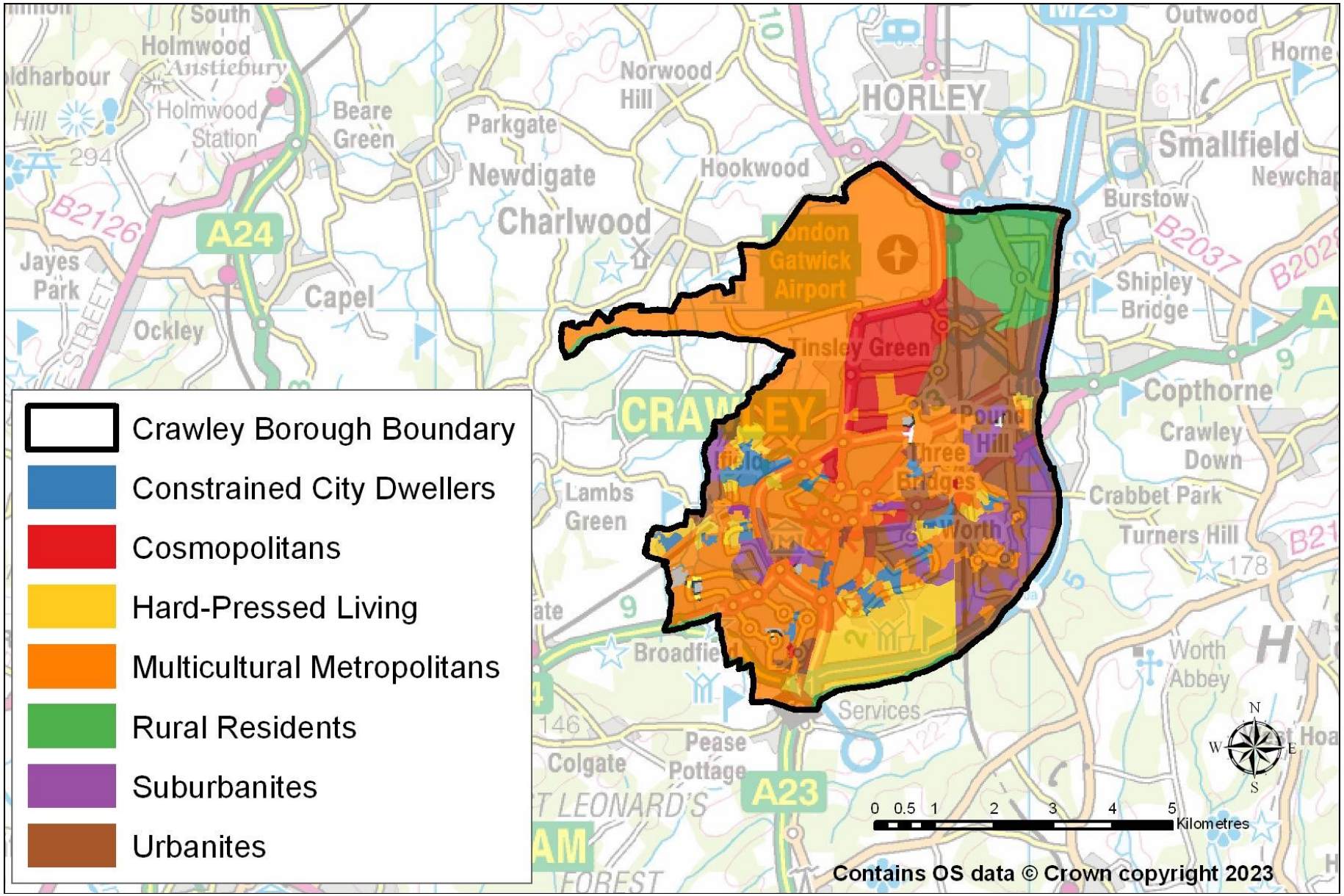


Source: https://www.nomisweb.co.uk/census/2011/WU03UK/chart/1132462352

University of Southampton



University of Southampton

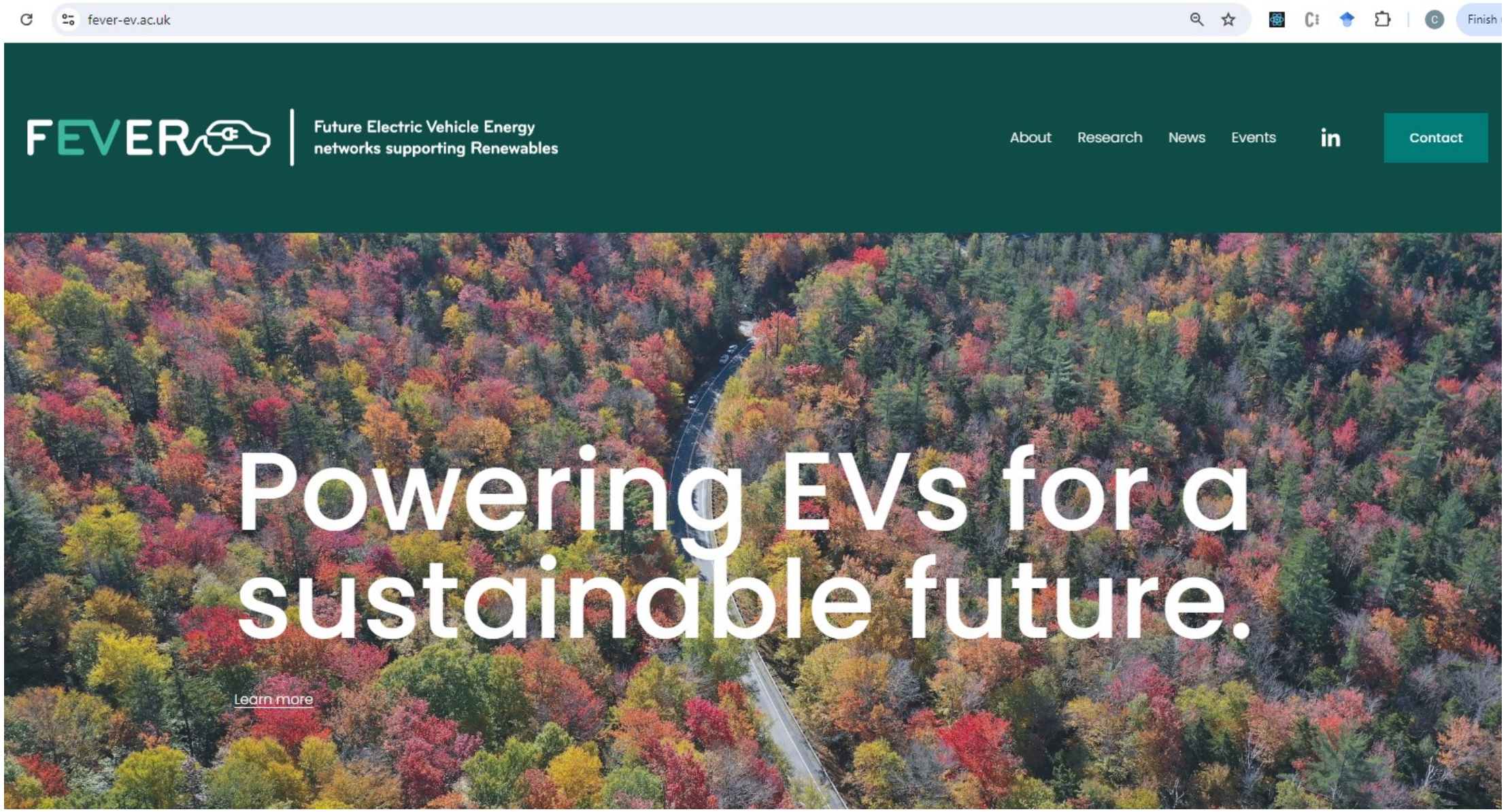


University of Southampton

Other case study areas

- Southampton City Council
- Brighton and Hove City Council
- Evidence based
  - Geostatistical framework
  - Confidence in the modelling approach(es)
- Electricity Supply – e.g. Where DNO capacity is insufficient

University of Southampton



University of Southampton

Data gaps (pavements)

Pavement width < 1m

Pavement width >= 1m < 1.5m

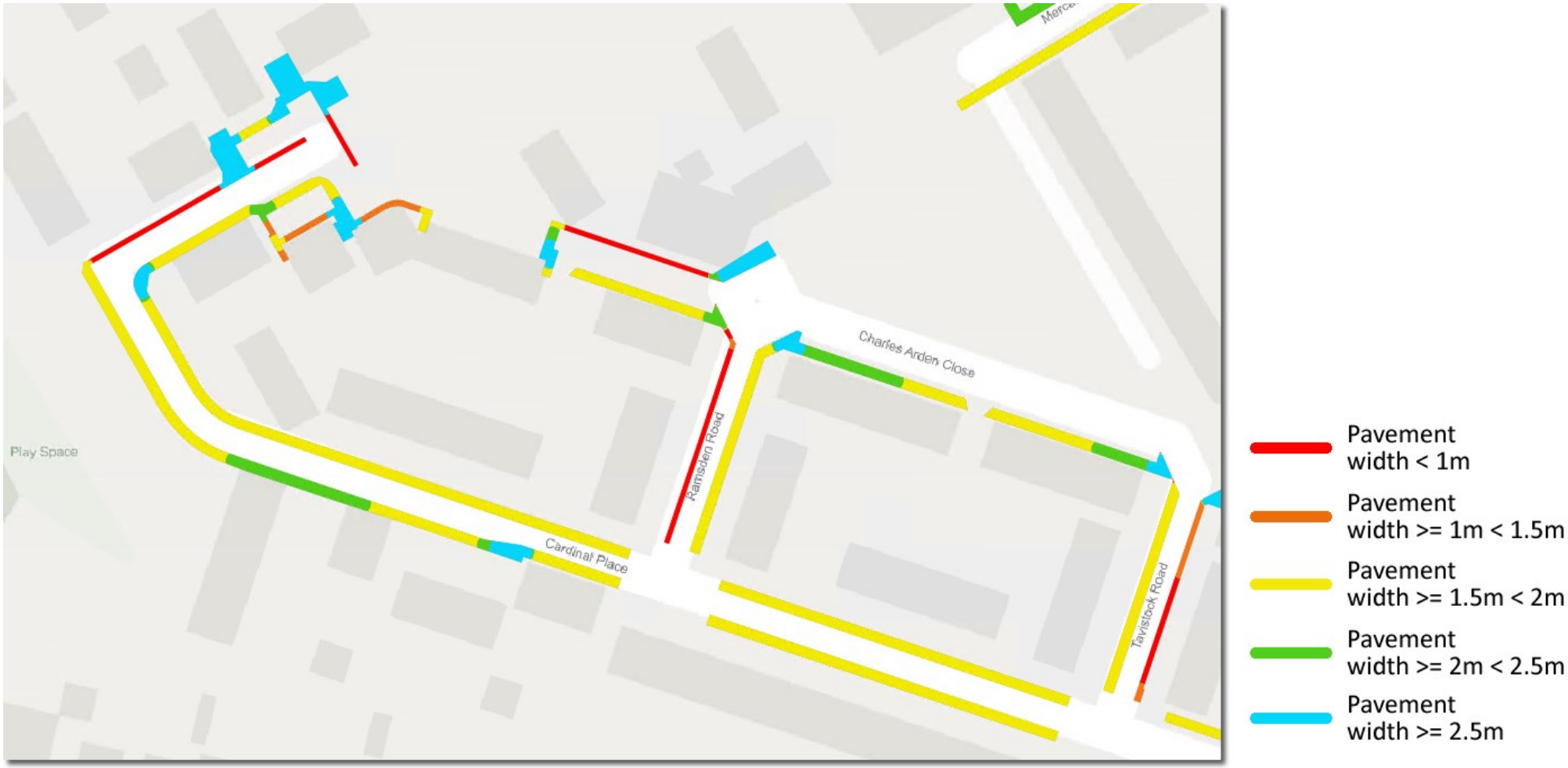
Pavement width >= 1.5m < 2m

Pavement width >= 2m < 2.5m

Pavement width >= 2.5m

University of Southampton

Data gaps (pavements)



University of Southampton

Questions….

University of Southampton