

### The CoiL project – exploratory funding

- Charging pOInt Locations (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)



### The ELECTRO project – broader research

- ELEctric Charging Technology Resource Optimization (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



### <u>Electric Vehicle Charging Infrastructure – Where should it be placed?</u>

Objective 1
Quantify the **demand** for EVCI

#### Work Package 1

Determine geodemographic patterns of commuting (post pandemic)
"Who works where and when" (to higher resolution than census).

### charge at home?

are less likely to be able to

Where is the 'home' demand?

Which geodemographic groups

# Task 2 Where is the 'work' demand? Which workplace

environments are the highest priority for EVCI?

#### Task 3

Task 1

How have commuter journeys changed post-pandemic?
Consider a specific area, e.g.
Soton. Refine origin and destination inputs to the POP247 model?

#### Task 4

Where is the 'fleet' demand? How will fleet management need to evolve?

#### Task 5

Where is the 'tourism' demand?
Cornwall – the perfect case study!

Objective 2
Quantify the **supply** of EVCI

### Objective 3

Create an evidence-based framework for LAs

#### **Work Package 3**

Create a dynamic model to help visualise the demand and supply at the local level at different times

#### Task 1

Understand the knowledge gaps for LAs

#### Task 2

Create a supply and demand model and develop into a decision-making tool

#### Work Package 2

Determine if and how the supply of Electricity and EVCI can meet demand for EVs

#### Task 1

Determine how 'circular' can the car (sharing) model become, minimising waste etc.

#### Task 3

How will 'taxi' trade evolve to embrace EVCI? Cell network approach (i.e. Max distance for Taxi A, Taxi B etc)

#### Task 2

Determine how Electricity supply needs to evolve to meet the demand for EVCI

National vs Local (Authority) scale.

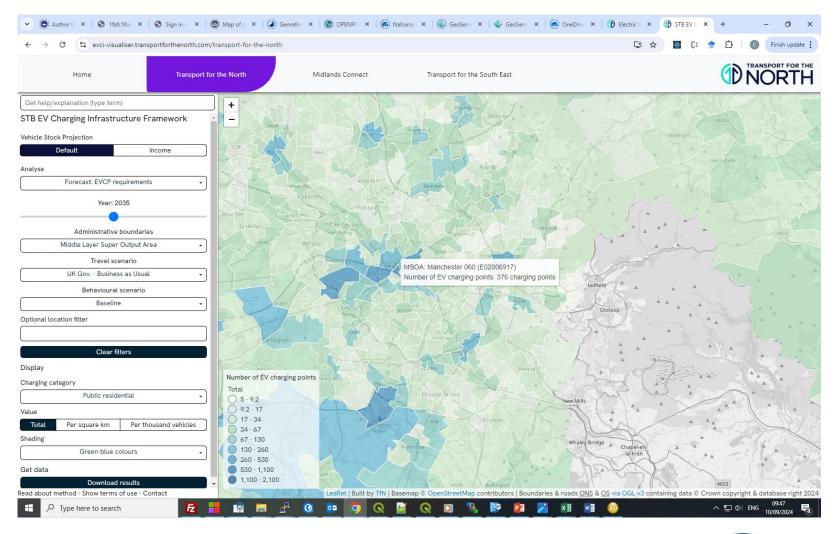


### **Data gaps**

- Beyond MSOA (<a href="https://evci-visualiser.transportforthenorth.com/">https://evci-visualiser.transportforthenorth.com/</a>)
- Modelled population movement (<a href="http://pop247.geodata.soton.ac.uk/">http://pop247.geodata.soton.ac.uk/</a>)
- Consumer Demographics (Output Area Classification)
- Al-driven simulations to model electricity supply in areas where it will be needed most –
  - Future Electric Vehicle Energy networks supporting Renewables (FEVER) <a href="https://www.southampton.ac.uk/research/projects/future-electric-vehicle-energy-networks-supporting-renewables-fever">https://www.southampton.ac.uk/research/projects/future-electric-vehicle-energy-networks-supporting-renewables-fever</a>
- Enhanced pavement attributes in OS MasterMap (width)

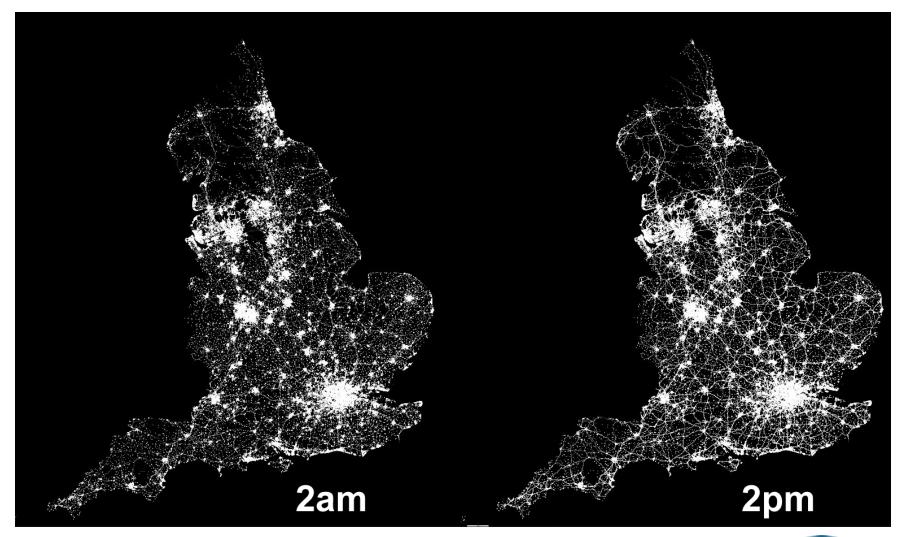


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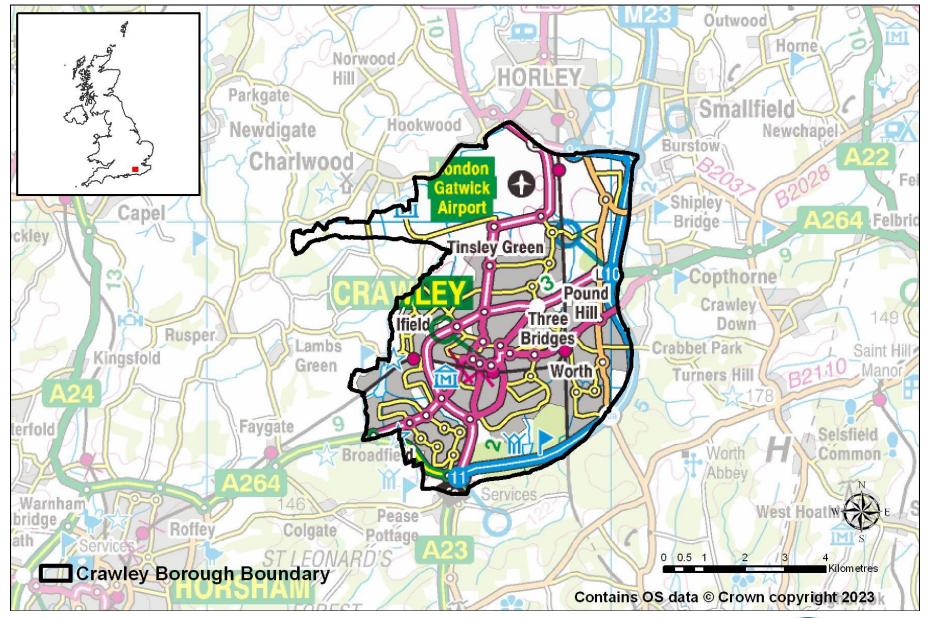




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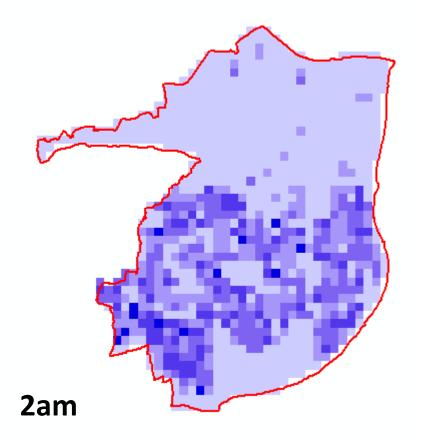




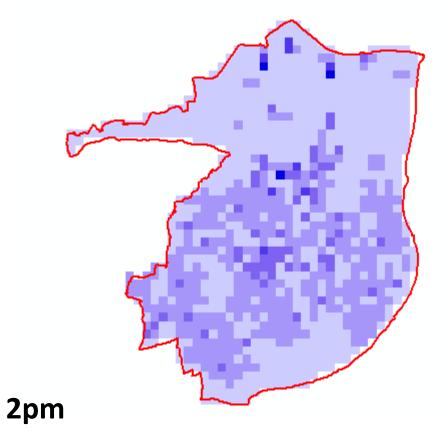


# **Case Study Locations – Crawley**

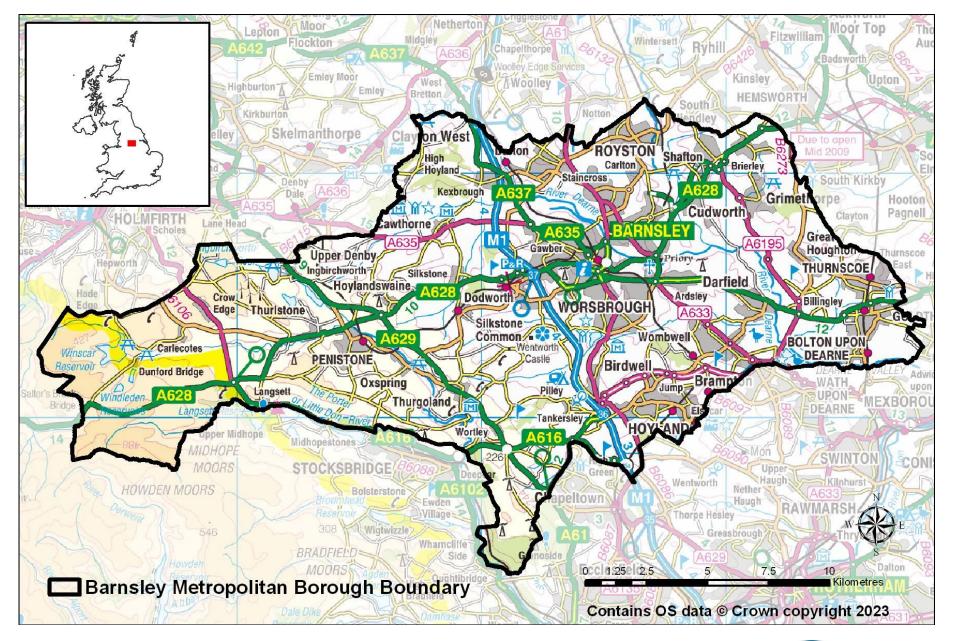
# Crawley



### **Cell size = 200m x 200m**





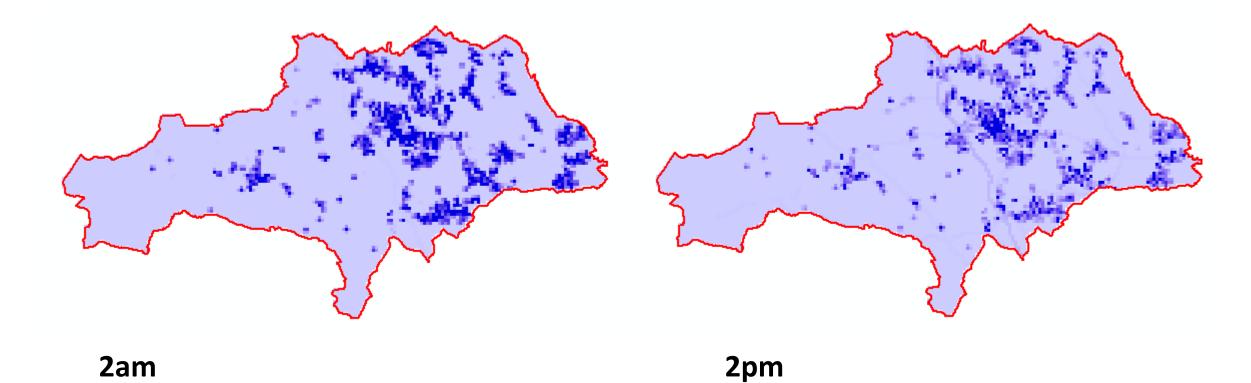




# **Case Study Locations – Barnsley**

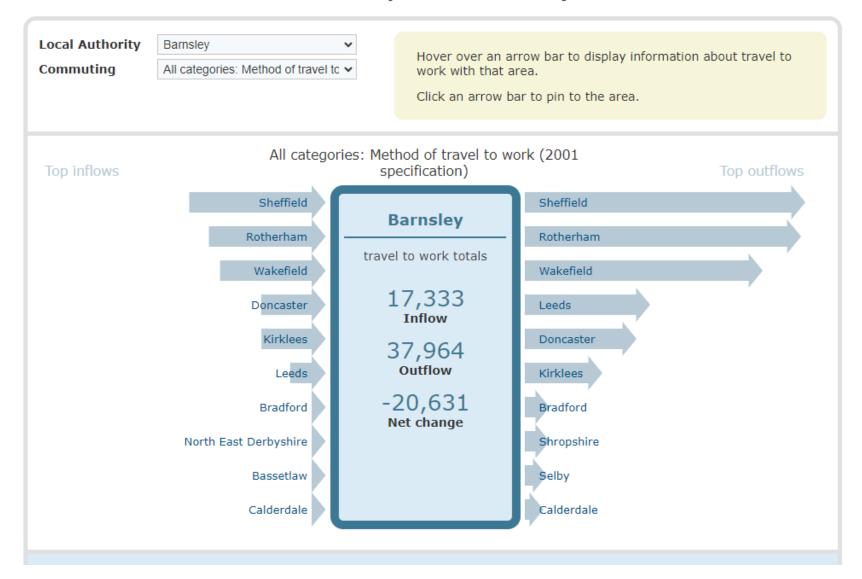
# **Barnsley**

### Cell size = $200m \times 200m$

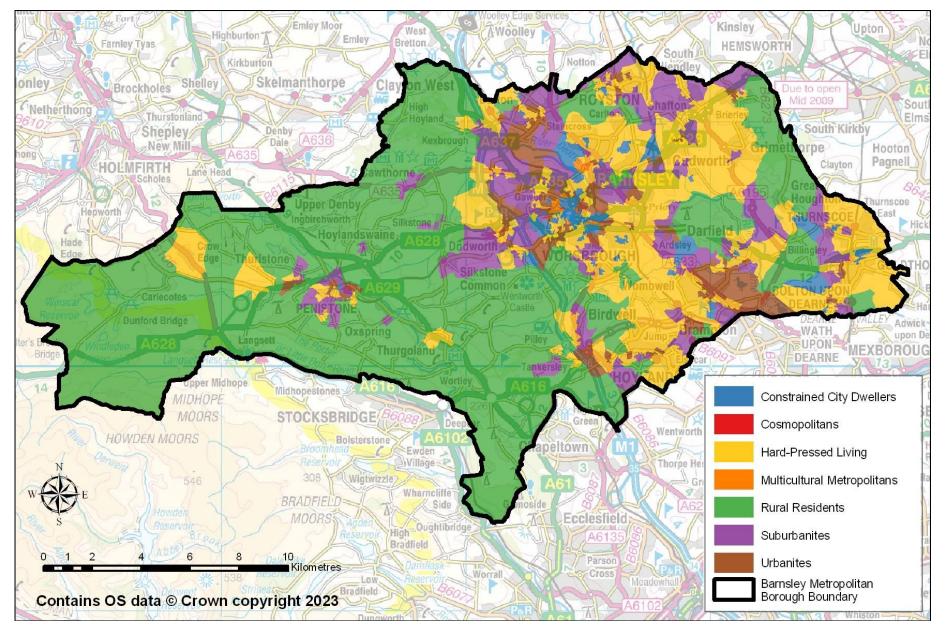




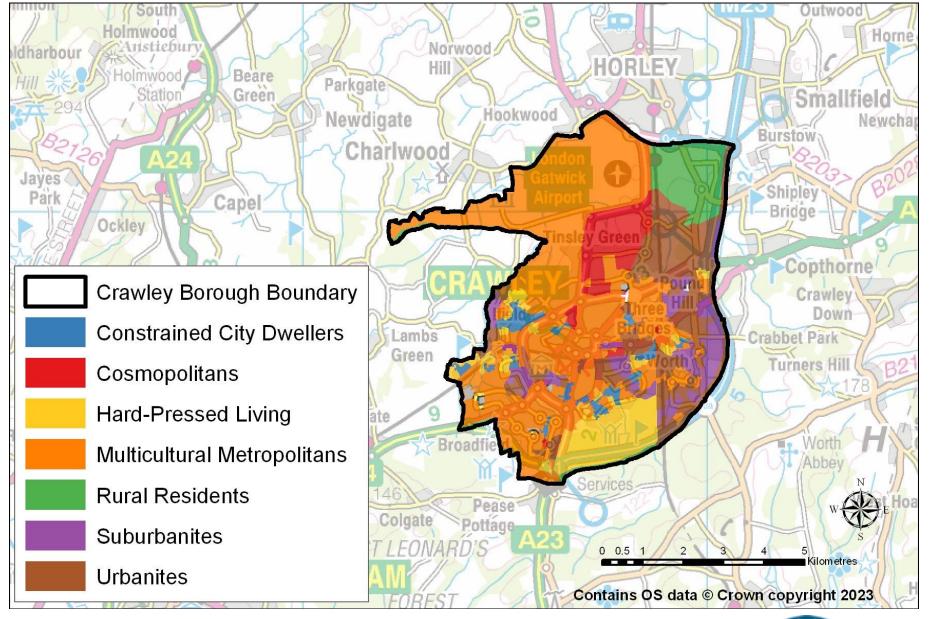
### Location of usual residence and place of work by method of travel to work













## 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





# Data gaps (pavements)





# Data gaps (pavements)





Questions....



