# Unlocking spatial carbon planning for local authorities

## Net-zero Spatial Planning Tool

Bioregional Space Syntax

# Do we really know the carbon impact of approving local plans?

# Agenda

1. Introduction *Lewis Knight, Director, Bioregional*
2. Defining the challenge –*Celia Davis, Senior Projects and Policy Officer, TCPA*
3. Our solutions

   *Jo Mortensen, Associate Director, Bioregional*

   *Ed Parham, Director, Space Syntax*
4. Borough partner insight & value – *Andrew Thomson, Planning Policy Manager, West Oxfordshire DC*
5. Q&A - *Lewis Knight, Director, Bioregional*

# 2. What is the challenge?

*Celia Davis, Senior Projects and Policy Manager, TCPA*

# The challenges

## What are we trying to solve?

- Persistent gaps between net-zero targets and local planning
- Evidencing Net-Zero Local Plans
- Land allocation to minimise future carbon emissions
- Growth locations affects transport emissions and on-site renewable energy potential
- Opportunity for carbon accounting PPG

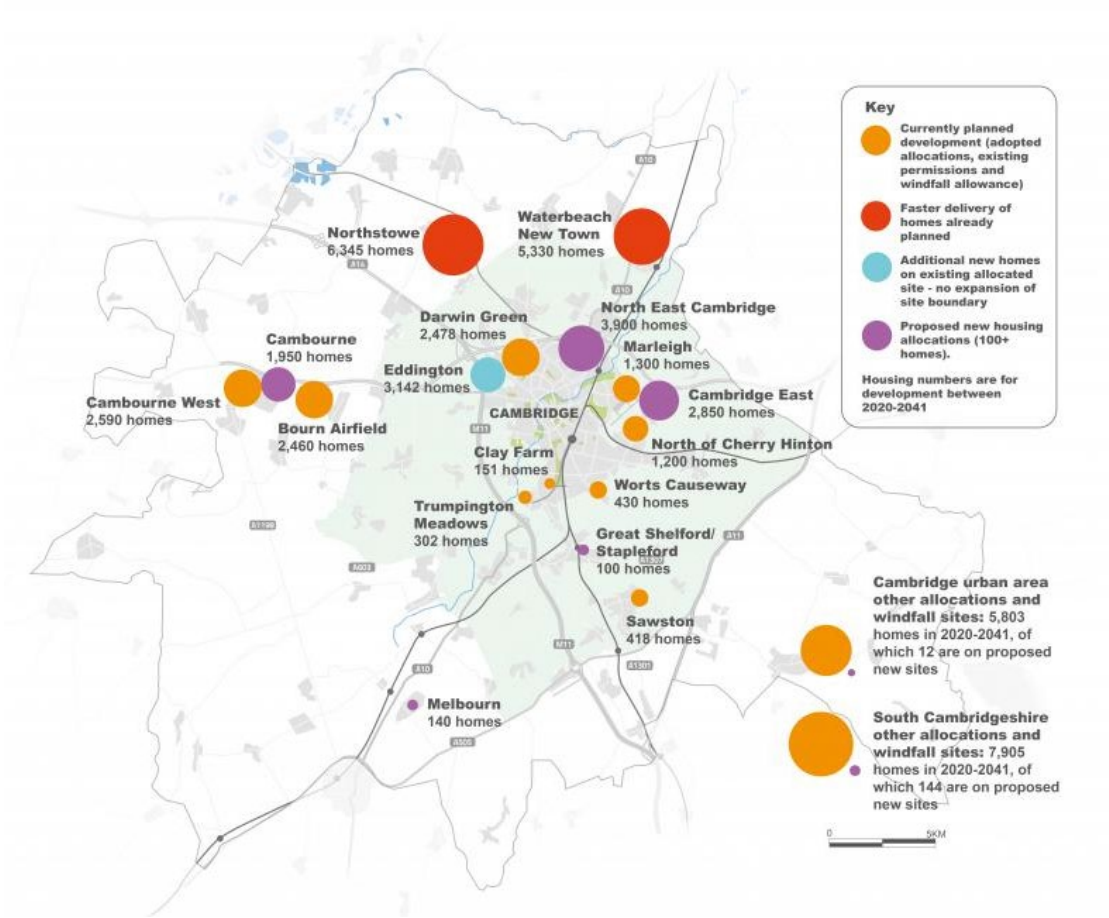
# 3. What is our solution?

*Jo Mortensen, Associate Director, Bioregional*

*Ed Parham, Director, Space Syntax*

# The roots of this tool

## Modelling the carbon from growth for Greater Cambridge, Central Lincolnshire and Forest of Dean




- Carbon implications of the **broad spatial locations** for growth
- Carbon implications of **strategic options** for growth
- Assessment criteria and methodology to assess the **carbon implications of sites** put forward for allocation

# The challenge

## Upgrade user experience and improve data

***This page contains the summary results of the six spatial models***

Total cumulative impact of new development in all six spatial locations combined, based on development sizes set out in row 12:

101,795 tCO2/a

*Reference year - 2020*

| Category 1: Urban - densification | Category 2: Edge of city - inside greenbelt | Category 3: Edge of city - outside | Category 4: Dispersal - new settlements | Category 5: Dispersal - villages | Category 6: Dispersal - public transport |
|---|---|---|---|---|---|

Specify the development siz

Assumed development den

Toggle to zero to adjust den

Manually enter density (che

Apply best in class domestic

Apply best in class non-dom

Replace all domestic gas bo

Replace all non- domestic ga

On site renewable energy ge

Embodied carbon reduction

0 - INDEX

TASK B: Appendix B - Non-domestic Energy Use Intensity (EUI) Figures

Return to index

Table B1: DEC data sports facilities

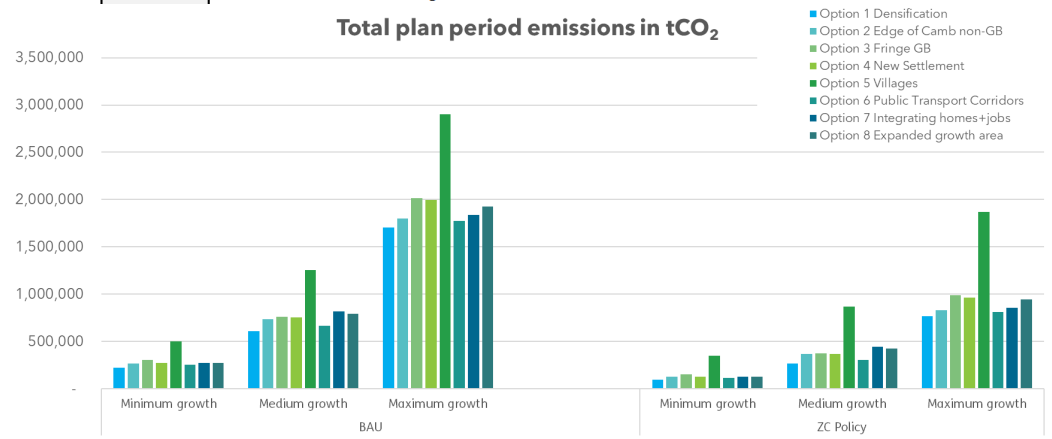
| LMK | ADD S1 | ADD S2 | ADD S3 | POST DE | BUILDING_REFEREN NUMBER | CURRENT_OPERATIO _RATING | YR1_OPERATIONA RATING | YR2_OPERATIONA RATING | OPERATIONAL_RA G_BAND | ELECTR CO2 | HEATIN O2 | RENEWAB CO2 | PROPER TYPE | INSPECTIO DATE | LOCAL_AU RITY | CONSTIT NCY | CO Y | LODGEMEN DATE | MAIN_BENC ARK | MAIN_HEATIN FUEL | OTHER UEL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2.93E+31 | SPORTS CE | Impington Vi | New Road | CB24 9LX | 7.92722E+11 | 33 | 35 | 34 | B | 93 | 104 | 0 | Dry Sports And Le | 07/01/2020 | E07000012 | E14000937 | Cambridge | 09/01/2020 | Swimming Pool Cent | Natural Gas | |
| 2.45E+30 | A BLOCK | Cambridge F | Kings Hedge | CB4 2QT | 5.07103E+11 | 52 | 53 | 50 | C | 102 | 48 | 0 | Dry Sports And Le | 13/01/2020 | E07000012 | E14000937 | Cambridge | 22/01/2020 | Dry Sports And Leisur | Natural Gas | |
| 4.62E+29 | SPORTS HA | St Bedes Int | Birdwood Pa | CB1 3TD | 5.66627E+11 | 28 | 54 | 47 | B | 29 | 11 | 8 | Dry Sports And Le | 13/01/2020 | E07000008 | E14000617 | Cambridge | 14/01/2020 | Dry Sports And Leisur | Natural Gas | |
| 9.29E+31 | | Cambourne | Back Lane | CB23 6FY | 4.59803E+11 | 26 | 25 | 23 | B | 36 | 21 | 29 | Dry Sports And Le | 04/10/2019 | E07000012 | E14000934 | Cambridge | 04/10/2019 | Dry Sports And Leisur | Natural Gas | |
| 4.06E+30 | SPORTS HA | Sixth Form C | Long Road | CB2 8PX | 2.55388E+11 | 39 | 36 | 32 | B | 49 | 21 | 0 | Dry Sports And Le | 01/10/2019 | E07000008 | E14000934 | Cambridge | 30/10/2019 | Dry Sports And Leisur | Natural Gas | |
| 3.01E+30 | SPORTS HA | Hills Road S | Hills Road | CB2 8PE | 5.36976E+11 | 36 | 34 | 34 | B | 160 | 40 | 0 | Dry Sports And Le | 30/09/2019 | E07000008 | E14000617 | Cambridge | 23/09/2019 | Dry Sports And Leisur | Natural Gas | |
| 3.52E+31 | | Cambridge F | Gonville Pla | CB1 1LY | 5.61889E+11 | 73 | 77 | 73 | C | 222 | 917 | 924 | Swimming Pool C | 18/04/2019 | E07000008 | E14000617 | Cambridge | 09/08/2019 | Swimming Pool Cent | Natural Gas | |
| 3.7E+31 | BU84 FRAN | Cambridge L | Addenbrook | CB2 0QQ | 1.69328E+11 | 58 | 84 | 122 | C | 300 | 382 | 0 | Fitness And Healt | 17/05/2019 | E07000008 | E14000934 | Cambridge | 17/05/2019 | Fitness And Health C | District Heating | |
| 1.06E+32 | | University of | Sports Cent | CB3 0AS | 5.53102E+11 | 60 | 55 | 50 | C | 363 | 303 | 35 | Dry Sports And Le | 03/01/2019 | E07000012 | E14000934 | Cambridge | 25/01/2019 | Dry Sports And Leisur | Natural Gas | |
| 2.45E+30 | A BLOCK | Cambridge F | Kings Hedge | CB4 2QT | 5.07103E+11 | 53 | 50 | 53 | C | 105 | 53 | 0 | Dry Sports And Le | 29/01/2019 | E07000012 | E14000937 | Cambridge | 19/01/2019 | Dry Sports And Leisur | Natural Gas | |
| 3.52E+31 | | The Cherry I | Colville Plce | CB1 9EJ | 6.94247E+11 | 42 | 38 | 38 | B | 19 | 27 | 0 | Dry Sports And Le | 21/02/2019 | E07000008 | E14000617 | Cambridge | 26/02/2019 | Dry Sports And Leisur | Natural Gas | |
| 2.93E+31 | SPORTS CE | Impington Vi | New Road | CB24 9LX | 7.92722E+11 | 35 | 34 | 38 | B | 102 | 111 | 0 | Dry Sports And Le | 19/09/2019 | E07000012 | E14000937 | Cambridge | 28/09/2019 | Swimming Pool Cent | Natural Gas | |
| 3.01E+30 | SPORTS HA | Hills Road S | Hills Road | CB2 8PE | 5.36976E+11 | 34 | 34 | 36 | B | 156 | 42 | 0 | Dry Sports And Le | 30/09/2019 | E07000008 | E14000617 | Cambridge | 28/09/2019 | Dry Sports And Leisur | Natural Gas | |
| 4.06E+30 | SPORTS HA | Sixth Form C | Long Road | CB2 8PX | 2.55388E+11 | 36 | 32 | 42 | B | 42 | 23 | 0 | Dry Sports And Le | 01/10/2019 | E07000008 | E14000934 | Cambridge | 04/10/2019 | Dry Sports And Leisur | Natural Gas | |
| 9.29E+31 | | Cambourne | Back Lane | CB23 6FY | 4.59803E+11 | 26 | 23 | 25 | A | 34 | 22 | 25 | Dry Sports And Le | 23/09/2019 | E07000012 | E14000934 | Cambridge | 17/07/2019 | Dry Sports And Leisur | Natural Gas | |
| 1.06E+32 | | University of | Sports Cent | CB3 0AS | 5.53102E+11 | 65 | 50 | 50 | C | 319 | 101 | 40 | Dry Sports And Le | 08/04/2019 | E07000012 | E14000934 | Cambridge | 26/04/2019 | Dry Sports And Leisur | Natural Gas | |
| 4.62E+29 | SPORTS HA | St Bedes Int | Birdwood Pa | CB1 3TD | 5.66627E+11 | 54 | 47 | 45 | C | 54 | 21 | 0 | Dry Sports And Le | 12/02/2019 | E07000008 | E14000617 | Cambridge | 25/02/2019 | Dry Sports And Leisur | Natural Gas | |
| 2.93E+31 | SPORTS CE | Impington Vi | New Road | CB24 9LX | 7.92722E+11 | 38 | 38 | 36 | B | 106 | 48 | 0 | Dry Sports And Le | 07/01/2019 | E07000012 | E14000937 | Cambridge | 09/01/2019 | Swimming Pool Cent | Natural Gas | |
| 3.01E+30 | SPORTS HA | Hills Road S | Hills Road | CB2 8PE | 5.36976E+11 | 36 | 34 | 34 | B | 160 | 40 | 0 | Dry Sports And Le | 30/09/2019 | E07000008 | E14000617 | Cambridge | 23/09/2019 | Dry Sports And Leisur | Natural Gas | |
| 2.45E+30 | A BLOCK | Cambridge F | Kings Hedge | CB4 2QT | 5.07103E+11 | 52 | 53 | 50 | C | 102 | 48 | 0 | Dry Sports And Le | 13/01/2020 | E07000012 | E14000937 | Cambridge | 22/01/2020 | Dry Sports And Leisur | Natural Gas | |
| 9.56E+31 | SPORTS HA | Coleridge Cl | Fradegrand Pl | CB1 3PJ | | | | | | | | | | | | | | | | | |
| 1.06E+32 | | University of | Sports Cent | CB3 0AS | | | | | | | | | | | | | | | | | |
| 9.29E+31 | | Cambourne | Back Lane | CB23 6FY | | | | | | | | | | | | | | | | | |
| 1.05E+31 | | Wilberforce I | Wilberforce I | CB3 0EQ | | | | | | | | | | | | | | | | | |
| 4.62E+29 | SPORTS HA | St Bedes Int | Birdwood Pa | CB1 3TD | | | | | | | | | | | | | | | | | |
| 4.06E+30 | SPORTS HA | Sixth Form C | Long Road | CB2 8PX | | | | | | | | | | | | | | | | | |
| 2.45E+30 | A BLOCK | Cambridge F | Kings Hedge | CB4 2QT | | | | | | | | | | | | | | | | | |
| 4.06E+30 | SPORTS HA | Sixth Form C | Long Road | CB2 8PX | | | | | | | | | | | | | | | | | |
| 2.93E+31 | SPORTS CE | Impington Vi | New Road | CB24 9LX | | | | | | | | | | | | | | | | | |
| 1.06E+32 | | University of | Sports Cent | CB3 0AS | | | | | | | | | | | | | | | | | |
| 1.05E+31 | | Wilberforce I | Wilberforce I | CB3 0EQ | | | | | | | | | | | | | | | | | |
| 3.01E+30 | SPORTS HA | Hills Road S | Hills Road | CB2 8PE | | | | | | | | | | | | | | | | | |
| 1.82E+31 | | Abbey Leisu | Pool Vag | CB5 8NT | | | | | | | | | | | | | | | | | |
| 1.82E+31 | | Abbey Leisu | Pool Vag | CB5 8NT | | | | | | | | | | | | | | | | | |
| 9.29E+31 | | Cambourne | Back Lane | CB23 6FY | | | | | | | | | | | | | | | | | |
| 4.62E+29 | SPORTS HA | St Bedes Int | Birdwood Pa | CB1 3TD | | | | | | | | | | | | | | | | | |
| 2.93E+31 | SPORTS CE | Impington Vi | New Road | CB24 9LX | | | | | | | | | | | | | | | | | |

**Domestic assumptions:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Dwellings per hectare** | 30 *No.* | One bedroom - market | 39 *No.* | Aff. persons - one bed | 504 *No.* | GIA - one bedroom | 15,054 *m2* |
| | | Two bedroom - market | 45 *No.* | Aff. persons - two bed | 450 *No.* | GIA - two bedroom | 16,358 *m2* |
| **Resultant dwellings** | 1500 *No.* | Three bedroom - market | 384 *No.* | Aff. persons - three bed | 198 *No.* | GIA - three bedroom | 38,394 *m2* |
| | | Four bedroom - market | 432 *No.* | Aff. persons - four bed | 72 *No.* | GIA - four bedroom | 43,812 *m2* |
| One bedroom - total | 375 *No.* | | | Mark. persons - one bed | 58 *No.* | Average | 76 *m2* |
| Two bedroom - total | 225 *No.* | One bedroom - social | 336 *No.* | Mark | | | |
| Three bedroom - total | 450 *No.* | Two bedroom - social | 180 *No.* | Mark | | | |
| Four bedroom - total | 450 *No.* | Three bedroom - social | 66 *No.* | Mark | | | |
| Average bedroom - total | 2.7 *No.* | Four bedroom - social | 18 *No.* | | | | |
| Flats | 488 *No.* | Persons -flats | 1036 *No.* | | | | |
| Houses | 1013 *No.* | Persons - houses | 2802 *No.* | | | | |
| Persons - total | 3640 *No.* | Pre- school children | 495 *No.* | | | | |
| of which adults | 2509 *No.* | Primary school children | 406 *No.* | | | | |
| of which children (0-14) | 1130 *No.* | Secondary school children | 230 *No.* | | | | |

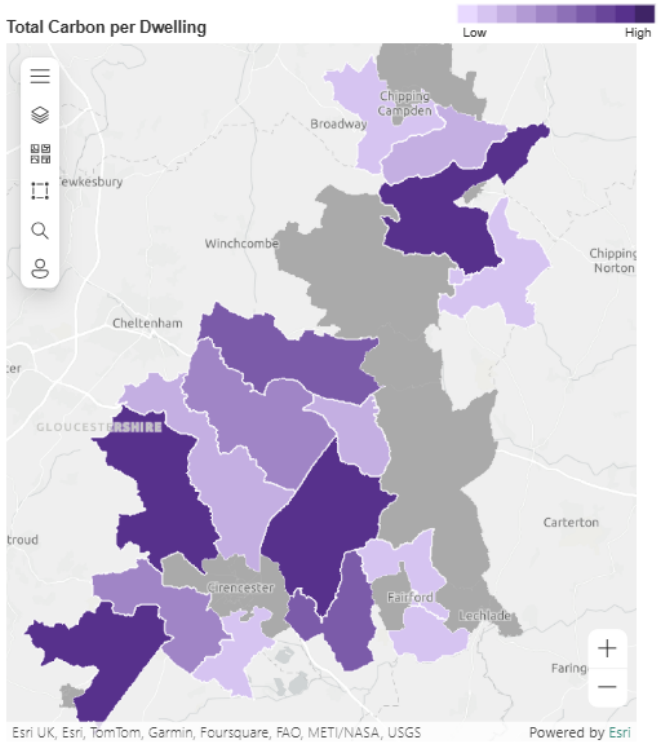
Space Syntax

UKRI Innovate UK



# Built from reliable data

## Defensible data sources




Cumulative emissions tCO2e

| LSOA | Location category | Total per Dwelling |
|---|---|---|
| E01022214 | Rural village and dispersed | 172 |
| E01022222 | Rural village and dispersed | 151 |
| E01022215 | Rural village and dispersed | 148 |
| E01022206 | Rural village and dispersed | 141 |
| E01022223 | Rural town and fringe | 137 |
| E01022175 | Rural village and dispersed | 132 |
| E01022176 | Rural village and dispersed | 130 |
| E01022205 | Rural village and dispersed | 129 |
| E01022201 | Rural village and dispersed | 126 |
| E01022216 | Rural village and dispersed | 125 |
| E01022207 | Rural village and dispersed | 124 |
| E01022221 | Rural village and dispersed | 115 |
| E01022180 | Rural town and fringe | 113 |
| E01022186 | Rural village and dispersed | 110 |
| E01022179 | Rural village and dispersed | 109 |
| E01022213 | Rural town and fringe | 108 |
| E01022187 | Rural village and dispersed | 103 |
| E01022212 | Rural town and fringe | 101 |
| E01022209 | Rural village and dispersed | 100 |
| E01022178 | Rural village and dispersed | 98 |
| E01022177 | Rural town and fringe | 98 |
| E01022204 | Rural town and fringe | 94 |
| E01022202 | Rural village and dispersed | 93 |
| E01022182 | Rural village and dispersed | 92 |
| E01022224 | Rural town and fringe | 92 |
| E01022208 | Rural town and fringe | 90 |
| E01022211 | Rural town and fringe | 87 |
| E01022184 | Rural town and fringe | 87 |
| E01022185 | Rural town and fringe | 84 |
| E01022217 | Rural town and fringe | 83 |
| E01022181 | Rural town and fringe | 82 |
| E01022197 | Rural town and fringe | 81 |
| E01022220 | Rural town and fringe | 80 |
| E01022199 | Urban city and town | 80 |

BCO

Department for Digital, Culture Media & Sport

Department for Levelling Up, Housing & Communities

CIBSE

Future Homes Hub

Department for Transport

BRITISH COUNCIL

The Institution of Structural Engineers

Department for Environment Food & Rural Affairs

Office for National Statistics

Cambridgeshire County Council

bre

NHS

SCOTTISH FUTURES TRUST

NHDC

Homes & Communities Agency

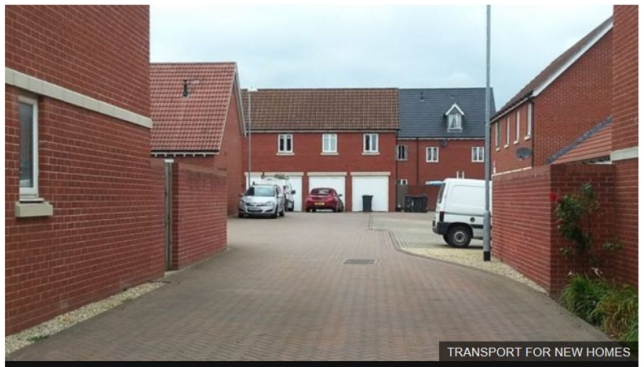
# Impact of location on transport carbon

## Quantify impacts of location on travel behaviour to avoid car dependent, carbon intensive development

### Young couples 'trapped in car dependency'

By Roger Harrabin
BBC environment analyst

24 October 2018 Share




The scramble to build new homes is producing communities where cars are the only form of transport

**It must be miserable: you've saved for a newly-built home past the town's ring-road, but now you're trapped too often in a metal box with wheels.**

This article is more than **2 years old**

### New greenfield housing forcing people to use cars, report finds

**Research finds sites too often far from amenities, without public transport, cycling links or even pavements**

The report finds that greenfield housing has become more car-based in recent years. Photograph: Martin Godwin/The Guardian

New greenfield housing developments are locking residents into car dependency, making everyday journeys impossible without a vehicle, a new report has found. Meanwhile, pledges for walking, cycling and public transport are often left unfulfilled.

The group Transport for New Homes (TfNH) visited 20 new housing developments in England, finding that while those on urban brownfield sites generally lived up to sustainable transport pledges, greenfield sites were often far from shops and amenities, without public transport, cycling links or even pavements, and the homes themselves were seemingly designed around car parking.


### NEW HOUSING DEVELOPMENTS FORCING PEOPLE TO RELY ON CARS

**Major new study shows car dependency of new homes has increased in every region of England outside of London over the last 15 years**

18 NOVEMBER 2024

New housing developments have increasingly locked residents into car dependency over the last 15 years, a new report from the New Economics Foundation (NEF), sponsored by Go Ahead, has found.

In a major new study, the think tank analysed data from every neighbourhood in England to develop a Car Dependency Index (CDI). The analysis combines data on car ownership, the share of residents commuting to work by car, the relative travel times to jobs and key amenities by car and public transport, and population density.

The CDI shows that over the last 15 years homes were increasingly built in places where people were reliant on cars for transport. The trend towards car dependency is present in every region outside of London.

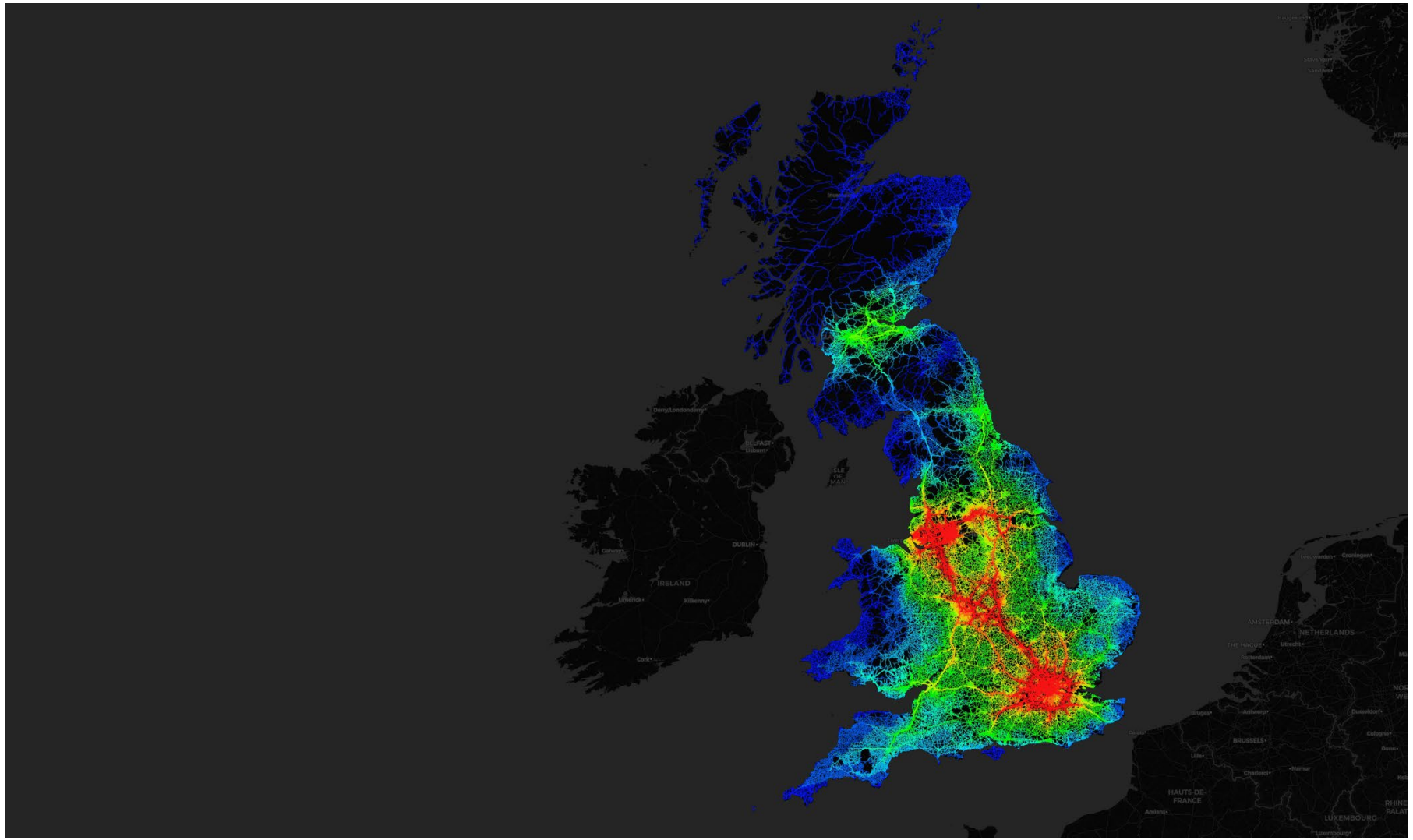
The public transport travel times from England's new homes to town centres, jobs, hospitals and schools have risen steadily over the same period, making it harder for people to travel sustainably. The report argues that forcing people into car dependency will have a significant negative impact on the government's ability to meet carbon emissions targets, boost active travel and support inclusive economic growth.

# Location specific transport carbon

## Four models developed explaining around 75% of transport mode share across 33,000 areas

- Developed and validated using multiple datasets that describe existing patterns of transport behaviour.
- Mode share component calculates journeys by all modes and for all purposes.
- Distance component extracts unique average commute distances for every MSOA.
- Model is both highly explanatory and includes elements that local authorities have influence over.

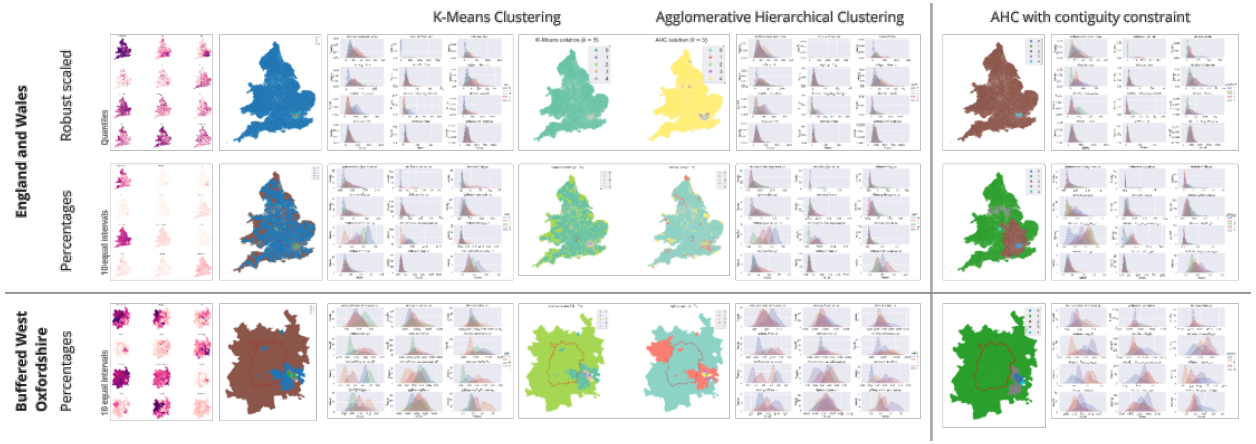
# Understanding location and transport behaviour

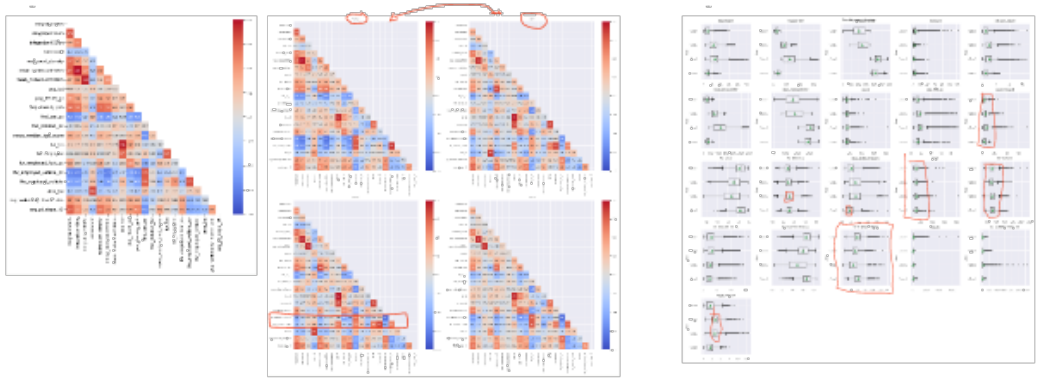


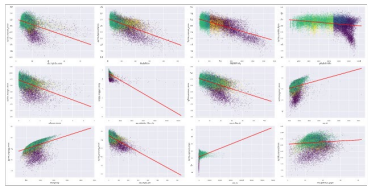

Categorise over 33,000 LSOAs in England and Wales based on multi-scale characteristics of location

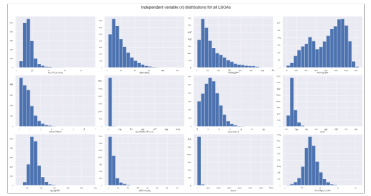
# Understanding location and transport behaviour

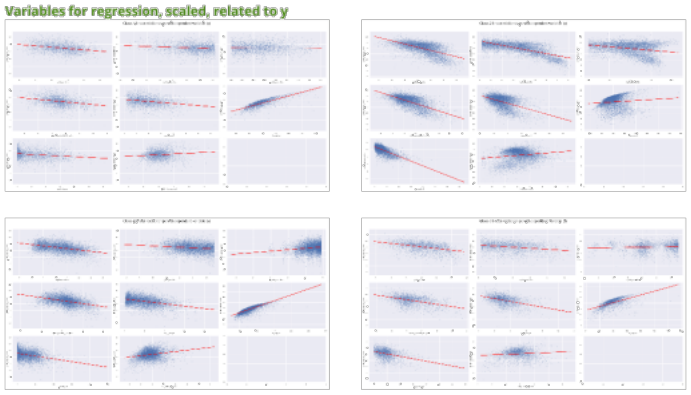
## Data deep dive to understand each category of LSOA in detail







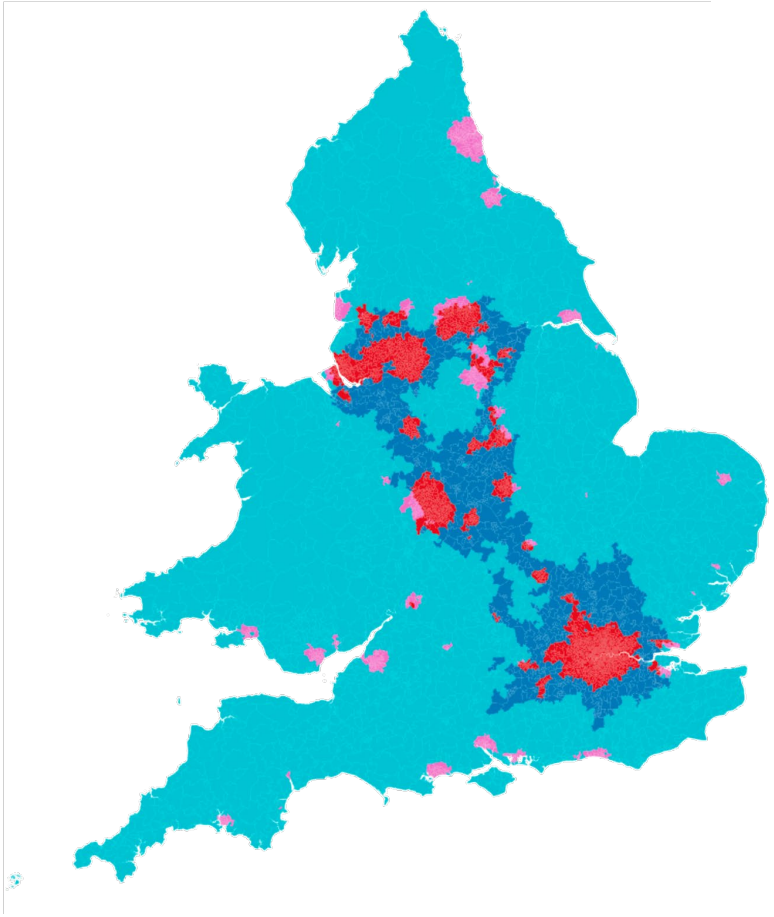


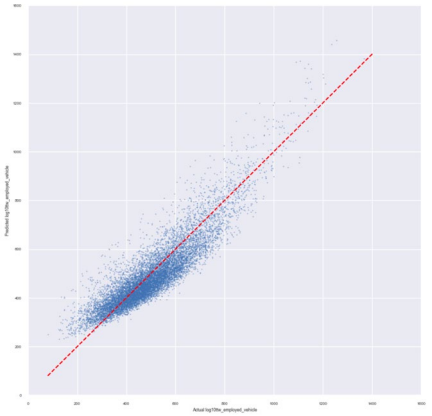

# Understanding location and transport behaviour

## Data deep dive to understand each category of LSOA in detail

Model combines data explaining:

- Integration within wider region
- Integration with surrounding settlements
- Walkability of local area
- Access to public transport
- Population
- Income
- Household make up





OLS Regression Results

| | | | |
|---|---|---|---|
| **Dep. Variable:** | log10ttw_employed_vehicle | **R-squared:** | 0.728 |
| **Model:** | OLS | **Adj. R-squared:** | 0.728 |
| **Method:** | Least Squares | **F-statistic:** | 3976. |
| **Date:** | Thu, 11 Jan 2024 | **Prob (F-statistic):** | 0.00 |
| **Time:** | 17:16:22 | **Log-Likelihood:** | 14979. |
| **No. Observations:** | 11886 | **AIC:** | -2.994e+04 |
| **Df Residuals:** | 11877 | **BIC:** | -2.987e+04 |
| **Df Model:** | 8 | | |
| **Covariance Type:** | nonrobust | | |

| | coef | std err | t | P>\|t\| | [0.025 | 0.975] |
|---|---|---|---|---|---|---|
| **const** | 2.2084 | 0.012 | 179.848 | 0.000 | 2.184 | 2.232 |
| **log10integration2km** | -0.0178 | 0.006 | -3.189 | 0.001 | -0.029 | -0.007 |
| **log10integration10km** | 0.0308 | 0.004 | 7.532 | 0.000 | 0.023 | 0.039 |
| **log10integration100km** | 0.0256 | 0.003 | 9.354 | 0.000 | 0.020 | 0.031 |
| **log10avg_walkability_15min_v3a** | -0.0603 | 0.002 | -29.469 | 0.000 | -0.064 | -0.056 |
| **avg_pt_stops_15** | 0.0002 | 9.18e-05 | 1.680 | 0.093 | -2.57e-05 | 0.000 |
| **ttw_employed** | 0.0005 | 3.49e-06 | 143.776 | 0.000 | 0.000 | 0.001 |
| **pop_density_pph** | -0.0006 | 3.8e-05 | -16.220 | 0.000 | -0.001 | -0.001 |
| **hhd_children_pc_scaled** | 0.0011 | 9.62e-05 | 11.631 | 0.000 | 0.001 | 0.001 |

| | | | |
|---|---|---|---|
| **Omnibus:** | 5512.594 | **Durbin-Watson:** | 1.041 |
| **Prob(Omnibus):** | 0.000 | **Jarque-Bera (JB):** | 55472.900 |
| **Skew:** | -1.976 | **Prob(JB):** | 0.00 |
| **Kurtosis:** | 12.818 | **Cond. No.** | 1.60e+04 |

# Net-zero Spatial Planning Tool

## Three levels of analysis

This suite of tools will provide:

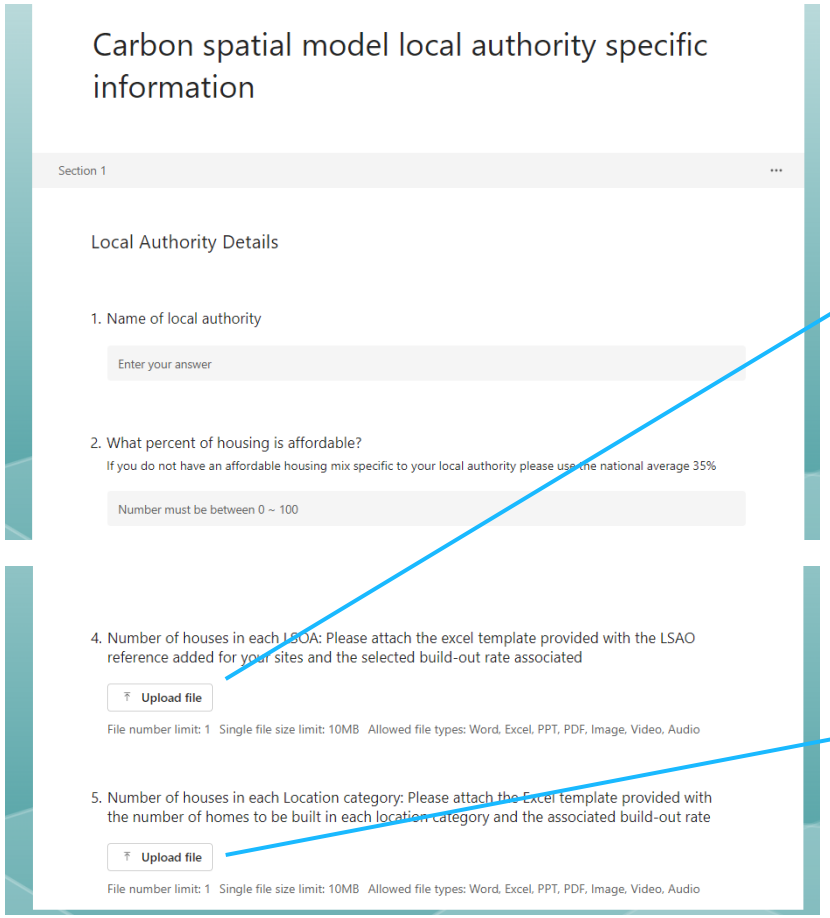
1. An **assessment of the carbon implications of the broad spatial locations for growth**
   - - Providing a “heat map” of carbon intensity by Output Area

2. An assessment of the carbon implications of **strategic options for growth**
   - Testing bespoke packages of strategic employment and housing site options

3. Comparative carbon assessments **of sites put forward for allocation**
   - **Providing analysis of growth scenarios**, supporting call-for-site process and addressing potential new housing targets.

# User experience - easy data uploads

## Data and scenario testing bespoke to your authority

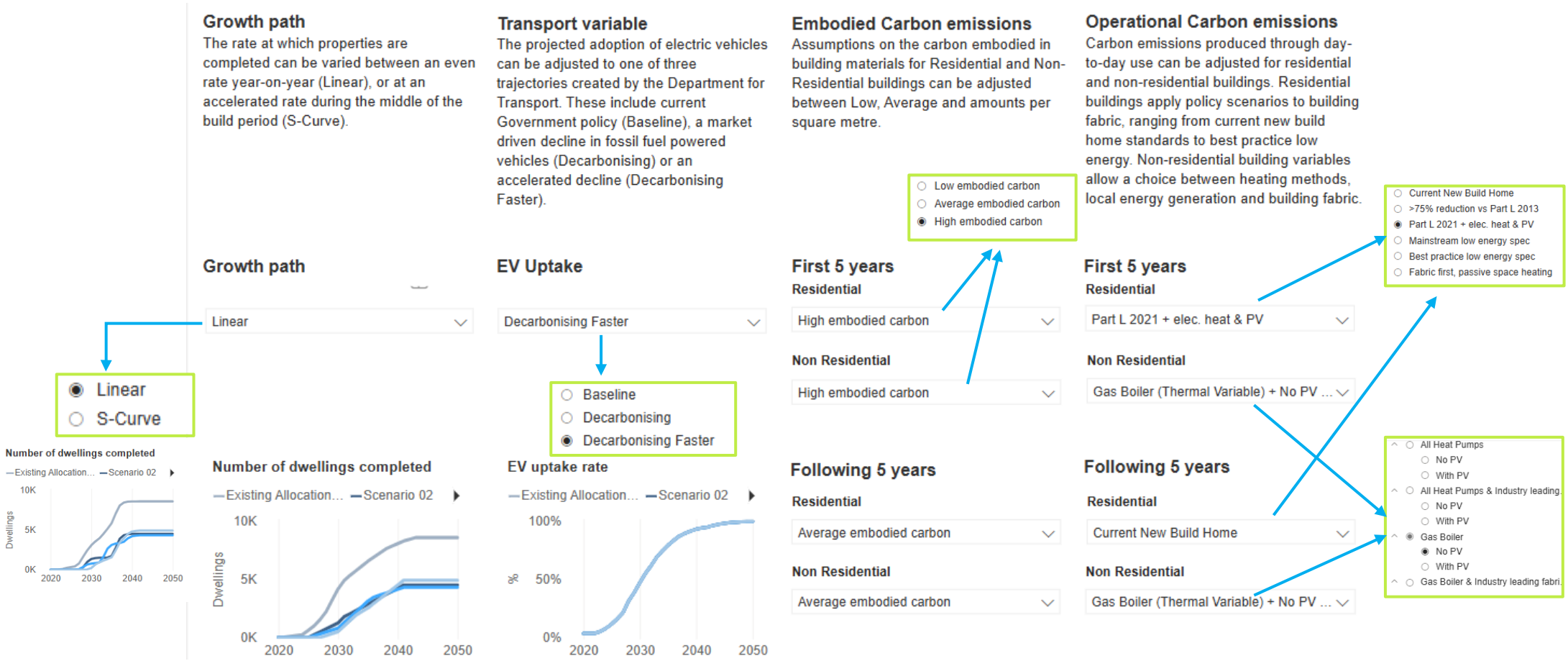



| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Please fill in these columns | | | | |
| 2 | Location_Category | Total number of houses to be built in location category in the plan period | Year houses will start being built in location category | Year final home will be built in location category | Build out rate |
| 3 | Urban conurbation | 2459 | 2024 | 2045 | Linear |
| 4 | Urban city and town | 2459 | 2030 | 2048 | Linear |
| 5 | Rural town and fringe | 3000 | 2025 | 2040 | Linear |
| 6 | Rural village and dispersed | 2459 | 2023 | 2045 | S-curve |
| 7 | | | | | |

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Please fill in these columns | | | | | | |
| 2 | Local Authority | West_Oxfordshire | | | | | |
| 3 | Site name | Local Authority | LSOA reference | Total number of houses to be built in LSOA in the plan period | Year houses will start being built in LSOA | Year final home will be built in LSOA | Build out rate |
| 4 | site 1 | West_Oxfordshire | E01028766 | 50 | 2027 | 2030 | Linear |
| 5 | Site 2 | West_Oxfordshire | E01028777 | 460 | 2033 | 2040 | Linear |
| 6 | Site 3 | West_Oxfordshire | E01028772 | 79 | 2030 | 2038 | S-curve |
| 7 | site 4 | West_Oxfordshire | E01028779 | 100 | 2028 | 2034 | S-curve |
| 8 | site 5 | West_Oxfordshire | E01028780 | 50 | 2027 | 2030 | Linear |
| 9 | site 6 | West_Oxfordshire | E01028781 | 460 | 2033 | 2040 | Linear |
| 10 | site 7 | West_Oxfordshire | E01028782 | 79 | 2030 | 2038 | S-curve |
| 11 | site 8 | West_Oxfordshire | E01028783 | 100 | 2028 | 2034 | S-curve |
| 12 | site 9 | West_Oxfordshire | E01028784 | 50 | 2027 | 2030 | Linear |
| 13 | site 10 | West_Oxfordshire | E01028785 | 460 | 2033 | 2040 | Linear |
| 14 | site 11 | West_Oxfordshire | E01028786 | 79 | 2030 | 2038 | S-curve |
| 15 | site 12 | West_Oxfordshire | E01028787 | 100 | 2028 | 2034 | S-curve |
| 16 | site 13 | West_Oxfordshire | E01028788 | 50 | 2027 | 2030 | Linear |
| 17 | site 14 | West_Oxfordshire | E01028789 | 460 | 2033 | 2040 | Linear |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |

# User experience - nimble variables

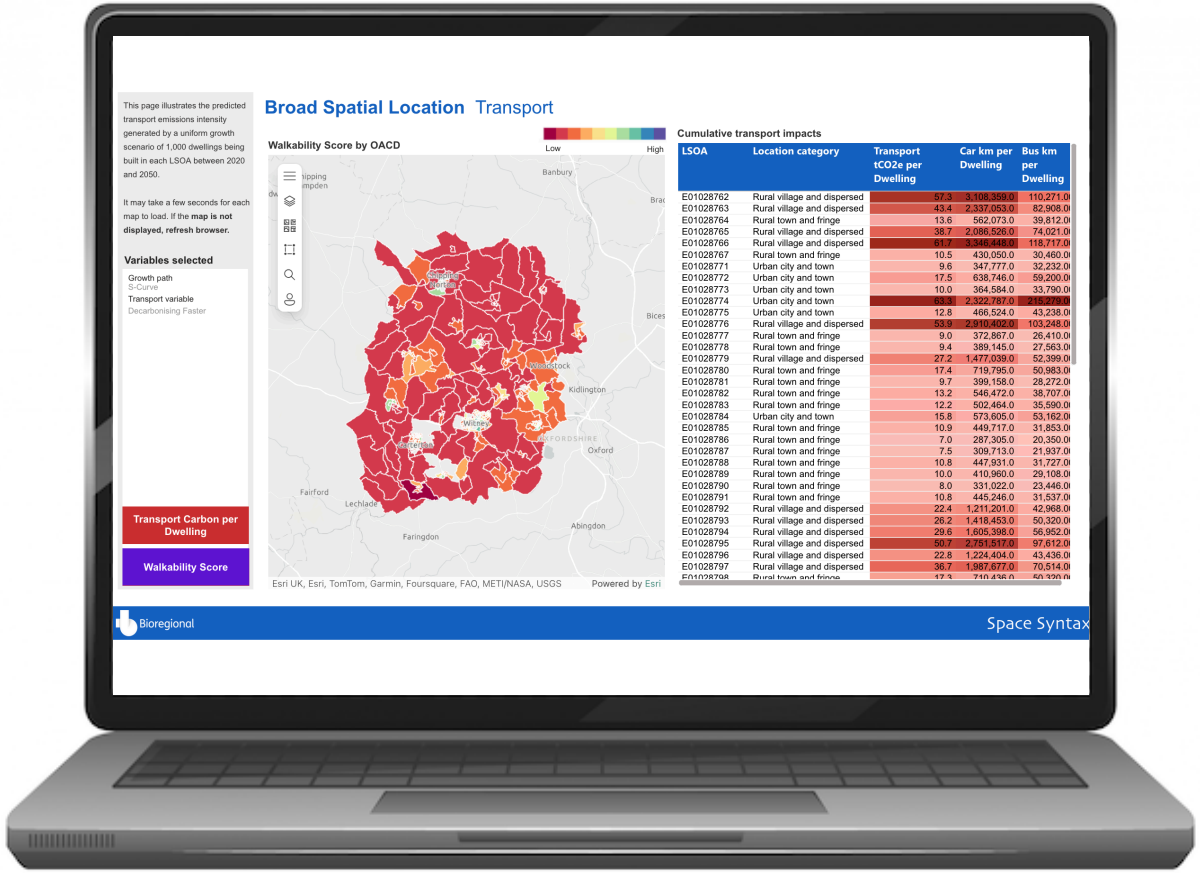
## Test the impact of your policies



# User experience – informing scenarios

## Model embedded into Net-zero Spatial Planning Tool

Can be used to help develop scenarios by allocating housing to least carbon intensive locations



# User experience – scenario comparison

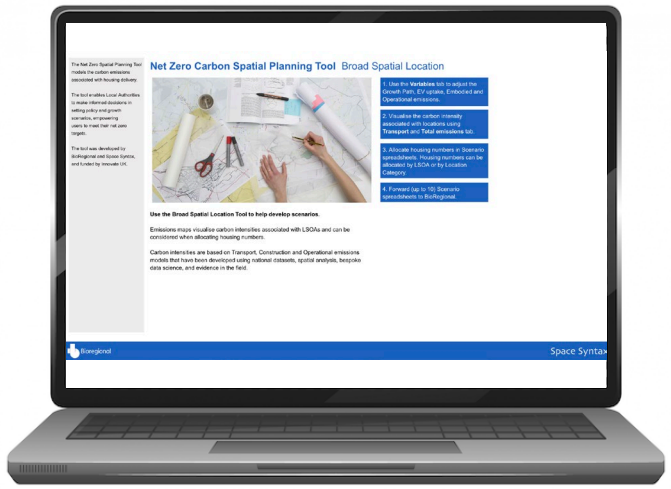
## Model embedded into Net-zero Spatial Planning Tool

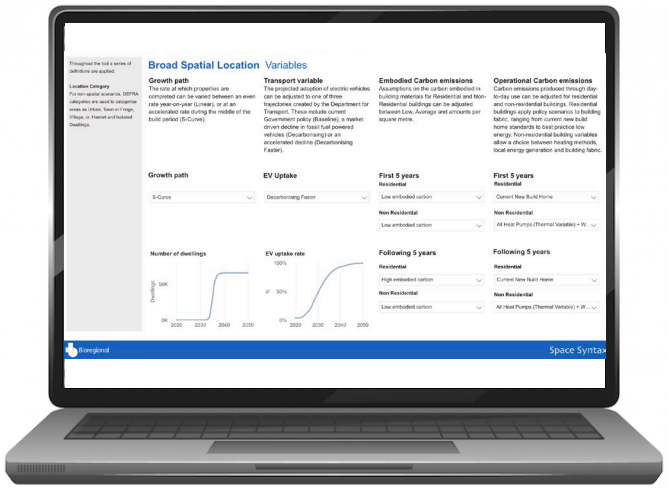
Can be used to help develop scenarios by allocating housing to least carbon intensive locations...

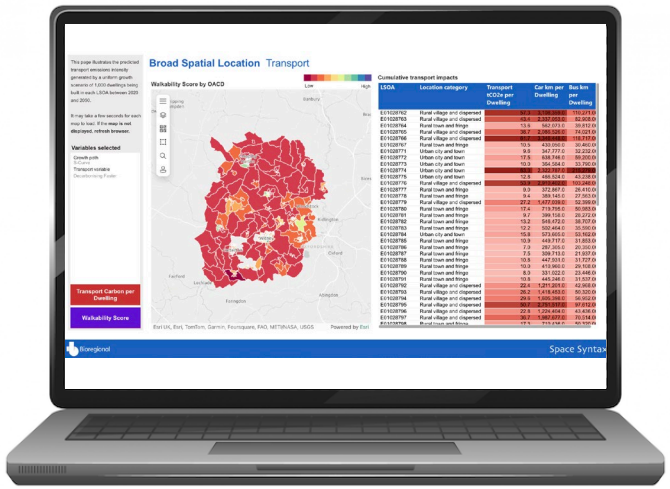
...to test and compare impacts of multiple scenarios when developed

# Interface


Net Zero Carbon Spatial Planning Tool
Spatial Carbon Model
Created by
Bioregional
Space Syntax
Supported by
Innovate UK


Net Zero Carbon Spatial Planning Tool Broad Spatial Location
Use the Broad Spatial Location Tool to help develop scenarios.
Space Syntax


Broad Spatial Location Variables
Growth path
Transport variable
Embodied Carbon emissions
Operational Carbon emissions
EV Uptake
First 5 years
Following 5 years
Space Syntax


Broad Spatial Location Transport
Walkability Score by OACD
Transport Carbon per Dwelling
Walkability Score
Space Syntax

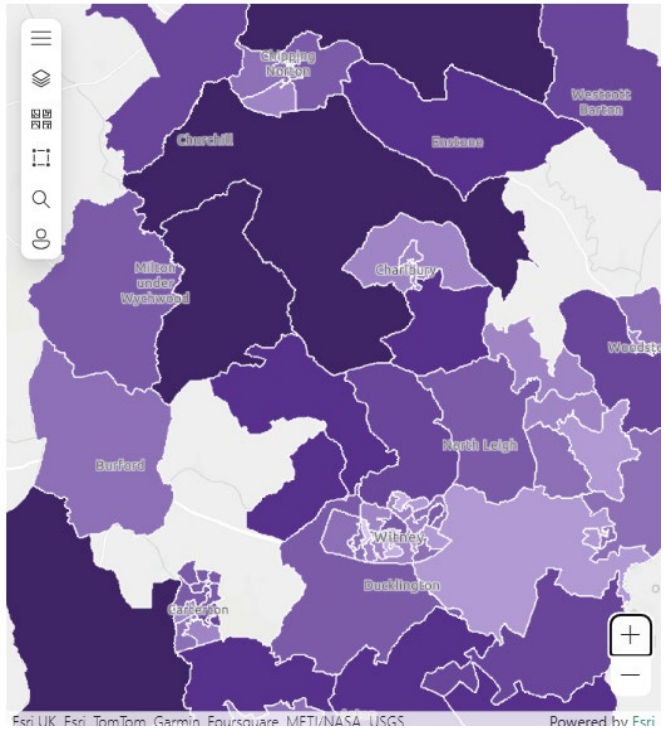

Spatial Carbon Model Transport Carbon emissions
Cumulative emissions by transport mode
Cumulative transport emissions per dwelling
Cumulative distances travelled by transport mode
Total cumulative emissions
Space Syntax


Spatial Carbon Model Individual Scenario
Total Carbon per Dwelling
Transport Carbon per Dwelling
Car km/dwelling
Annual emissions
Cumulative emissions
Space Syntax

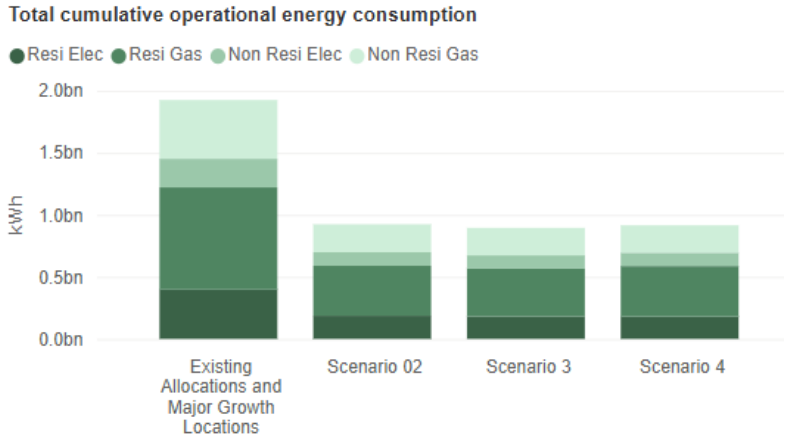
# Key functionality

## Intuitive applications

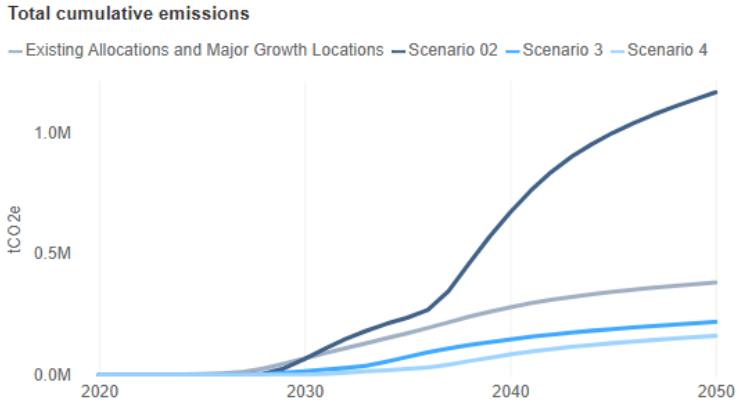
### Interactive Mapping




### Scenario Comparison




### Detailed Emissions Analysis



# 4. Borough Partner Insight & Value

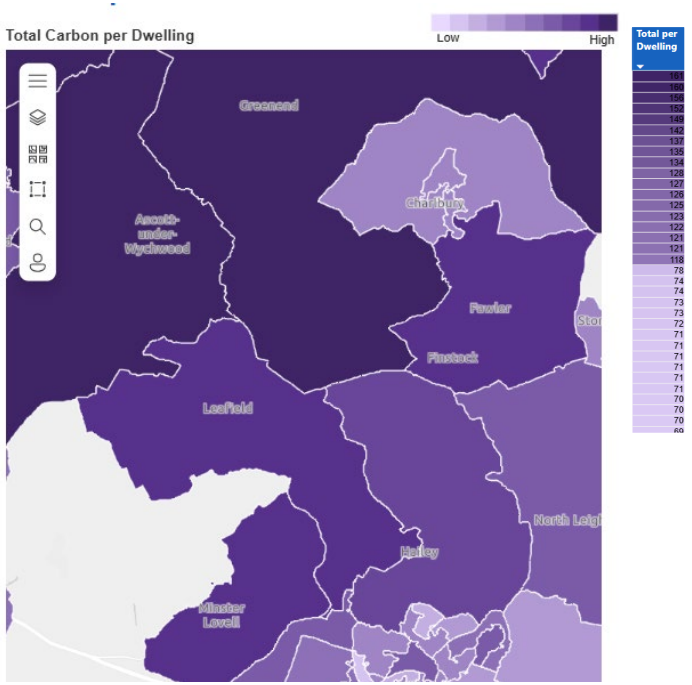
***Andrew Thomson, West Oxfordshire DC***
***Planning Policy Manager***

# What's unique about our tool?

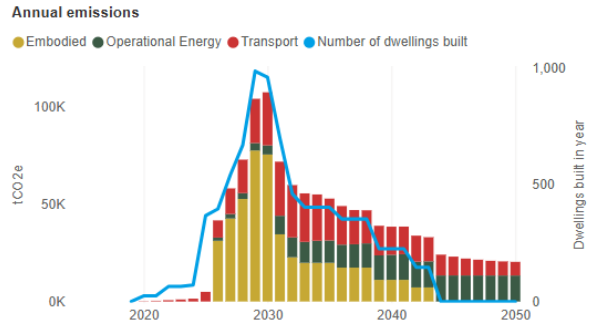
## User-Friendly

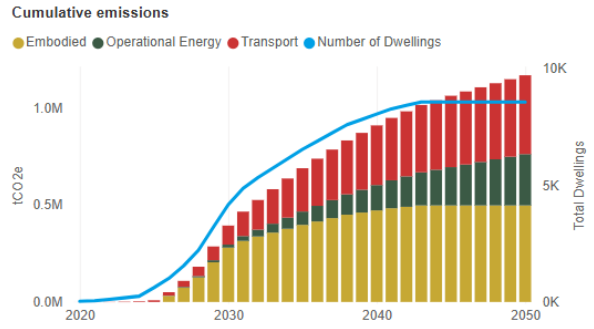
- Future-proof
- Cost-effective and scalable
- Comprehensive Carbon Impact Assessments
- Accessible through MS software suite

## Efficient




## Evidence + experience-based



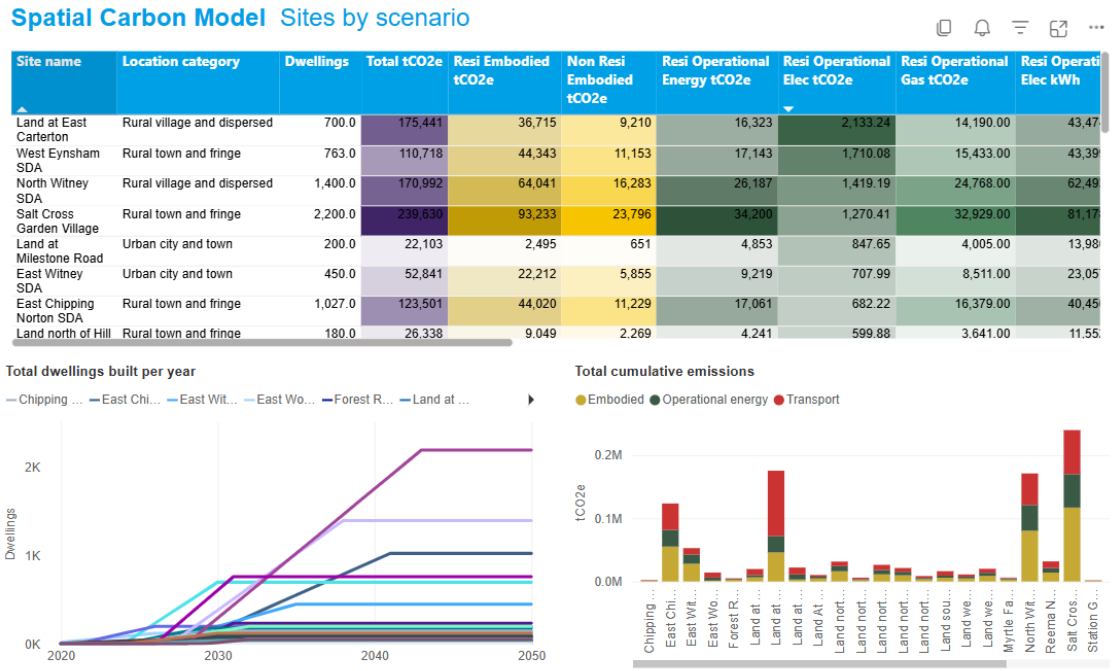



# Empowering Local Authorities

## What can the tool do for you?

- Modelled carbon impacts
- Improved decision-making
- Aligned with national policies
- Tailored growth scenarios
- Improved public and stakeholder engagement
- Visualised results

**Defensible Planning Framework**



# 5. Q & A

## Connect with us: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Lewis.knight@bioregional.com

**Jo Mortensen**
Jo.mortensen@bioregional.com

**Ed Parham**
e.parham@spacesyntax.com


## Book a demo today:

bioregional.com

# Thank you for joining us today

**Connect with us:**

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Lewis.knight@bioregional.com

**Jo Mortensen**
Jo.mortensen@bioregional.com

**Ed Parham**
e.parham@spacesyntax.com

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