2030 Vision for Cambridge Subregion

Land use: an academic's view

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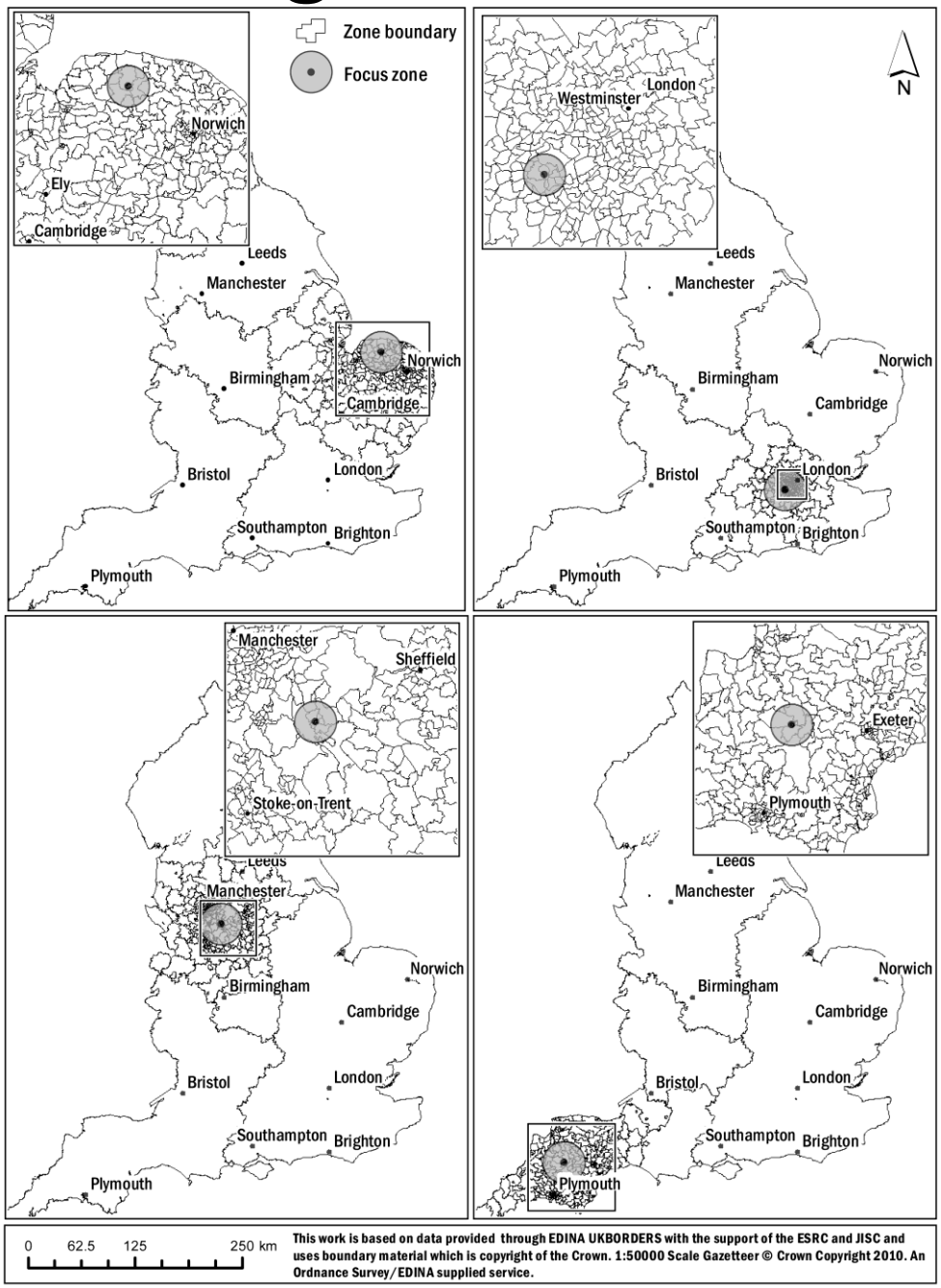
No easy escape for an academic

Usual escapes are:

- Long term thinking
- Public interests beyond admin boundaries
- Specialities:
  - In my case: Testing land use (and transport) design alternatives using large computer simulation models

Large scale modelling is happening …



- ReVISIONS (Echenique, Steemers, Hargreaves et al)
- Energy Efficient Cities (Dowling, Mair, Echenique, Steemers, Bois, Choudhary & Jin)
- My own work: a new system of zoning geometry for modelling; new business location model

Source of image: Hagen-Zanker & Jin, 2012

I'll focus on some by-products of modelling

- The past is a good guide to the future, if you know well not only the events, but also the people involved
- Duranton: 'Urban Evolutions: the fast, the slow, and the still'
  - city gains in innovative sectors and loses otherwise, in a way that is hard to predict
  - The basic patterns of land use and travel evolve slowly
- A helping hand?
  - a rather predictable planning system in England

Focusing on on basic land use patterns

- Size and land use density matter
  - 'the returns to innovative activities in cities are affected by their size: positively, through … dynamic agglomeration economies, and negatively, through crowding. When agglomeration economies dominate crowding, the probability of innovating in a city increases more than proportionately to its size' (Duranton, 2007)
- Increasing consensus: it is the increase of economic size that brings about agglomeration benefits, mainly through raised productivity

The subregion: punching above its weight

- 'Economic mass': sum of accessible economic activity weighted by transport cost, e.g.

$$M_i = \sum_j \left(\frac{E_j}{g_{ij}^{\alpha}} \right)$$

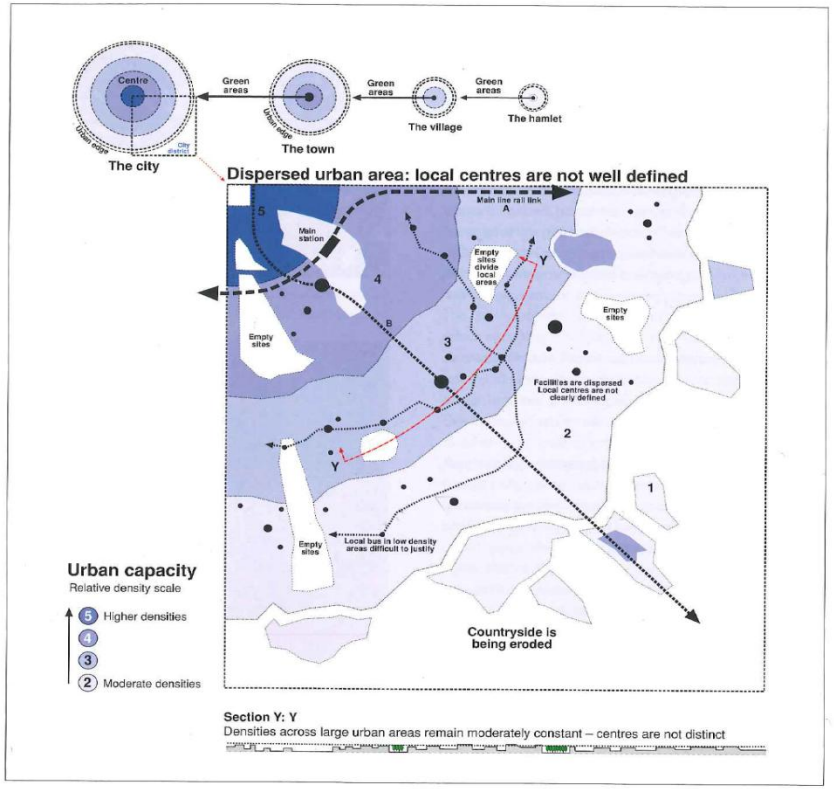
Including effects of transport

- 10% increase in the economic mass is associated with close to 1% increase of productivity

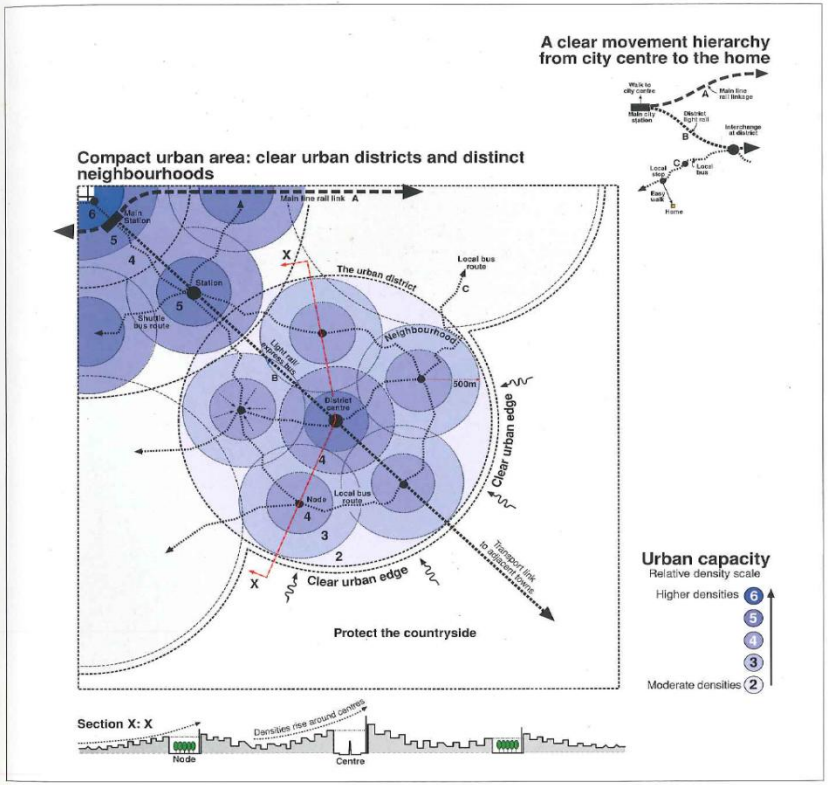
	Economic mass index (Rice et al, 2006)	GVA per head (£2009; ONS)
Reading	1.82	30,385
MK	2.21	28,687
Guildford	2.31	25,359
Oxford	1.74	22,163
Cambridge	1.02	21,656

Density pyramids?

Figure 2.1: The urban structure of dispersed and compact cities

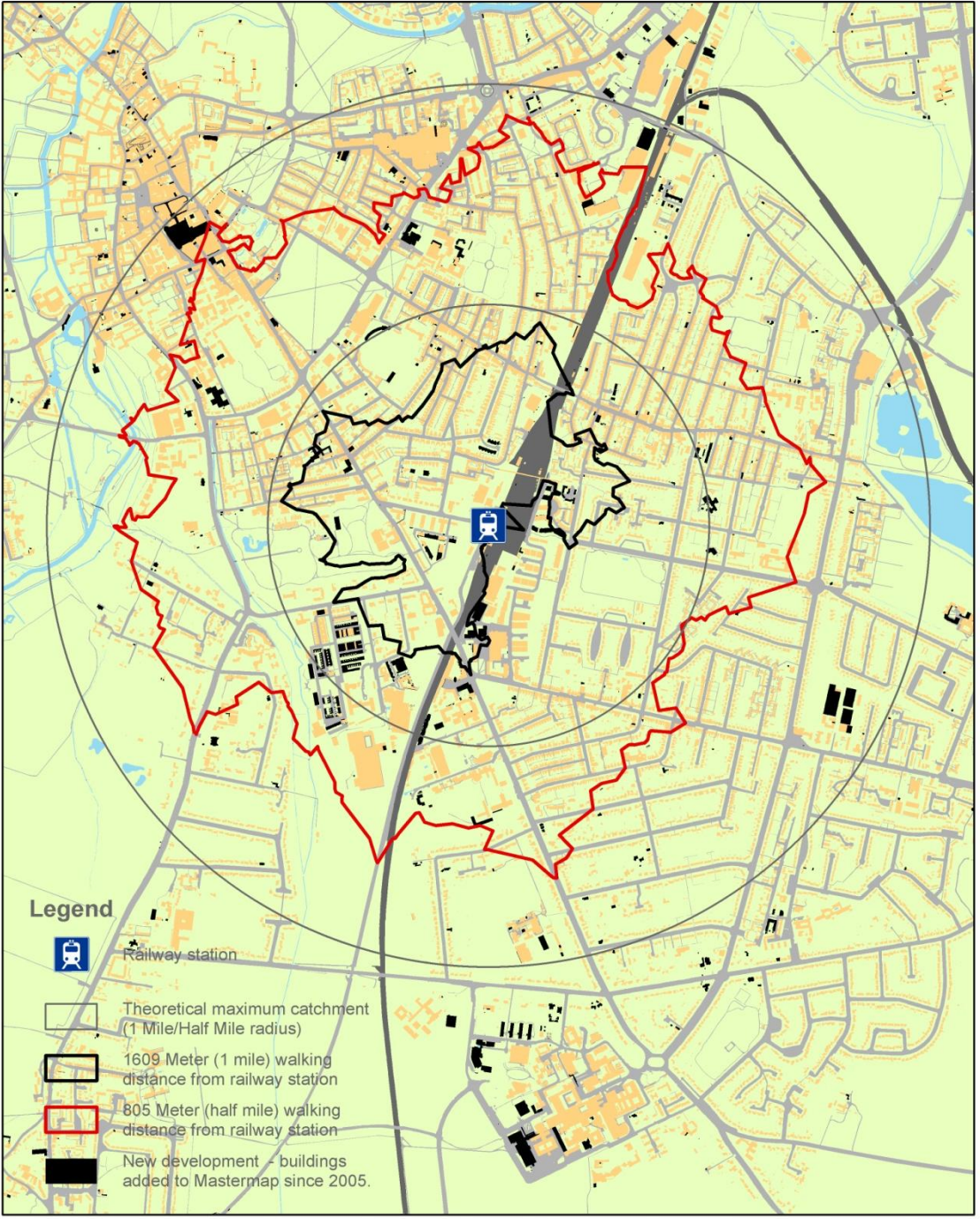


(Andrew Wright Associates)



Source: Urban Task Force, 1998, p54.

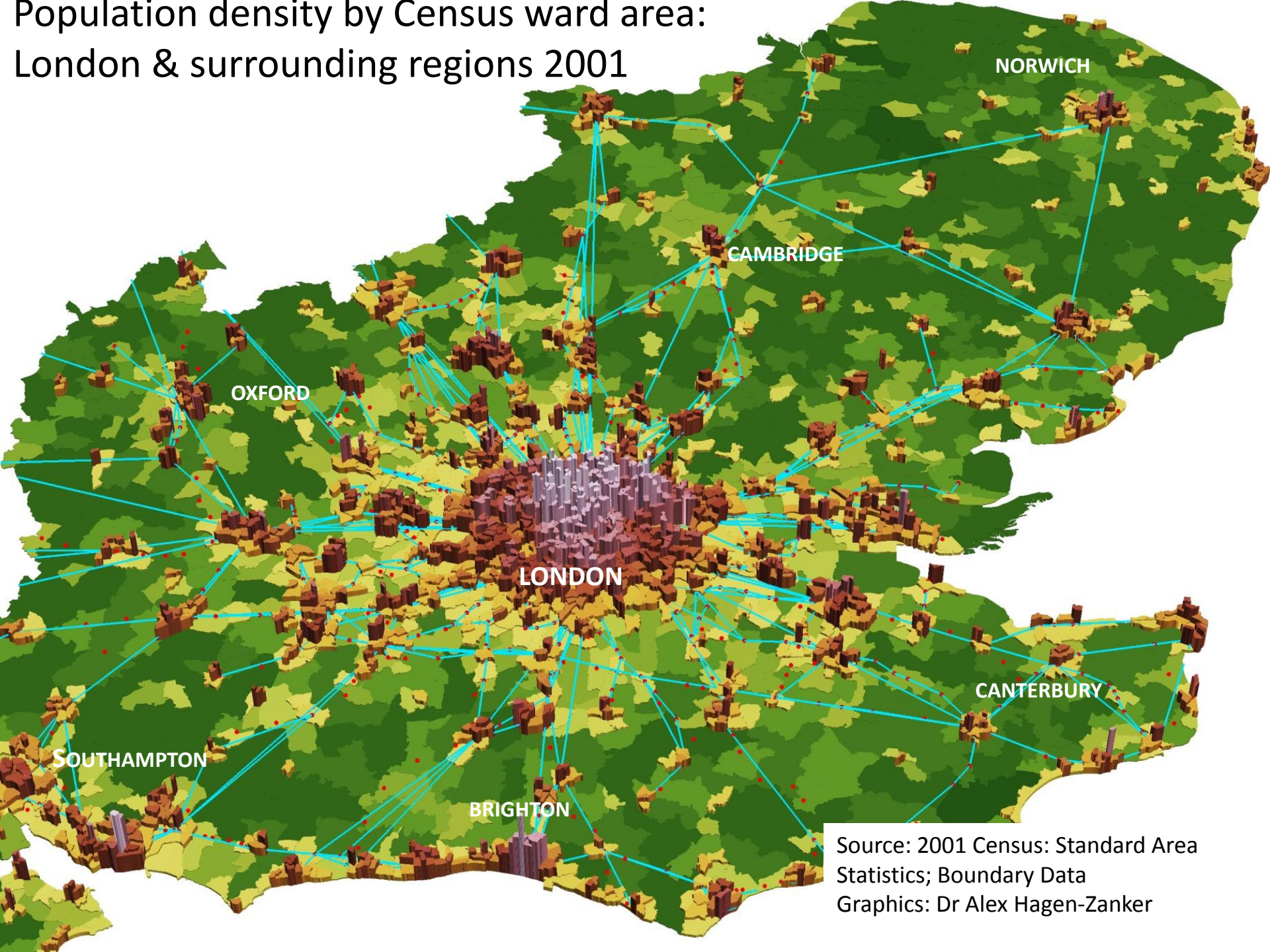
Where should high density development be?



Rail Station	Half-mile walking catchment (sq km)	% of theo-retical max
Cambridge	0.73	42%
Cambridge Modified	0.81	47%
Oxford	0.83	48%
Milton Keynes Central	0.84	49%
Reading	1.01	59%
Guildford	0.87	51%
St Albans	0.96	56%
Chelmsford	1.10	64%
Watford Junction	1.00	58%
Maidstone East	1.13	66%
Theretical max	1.72	100%

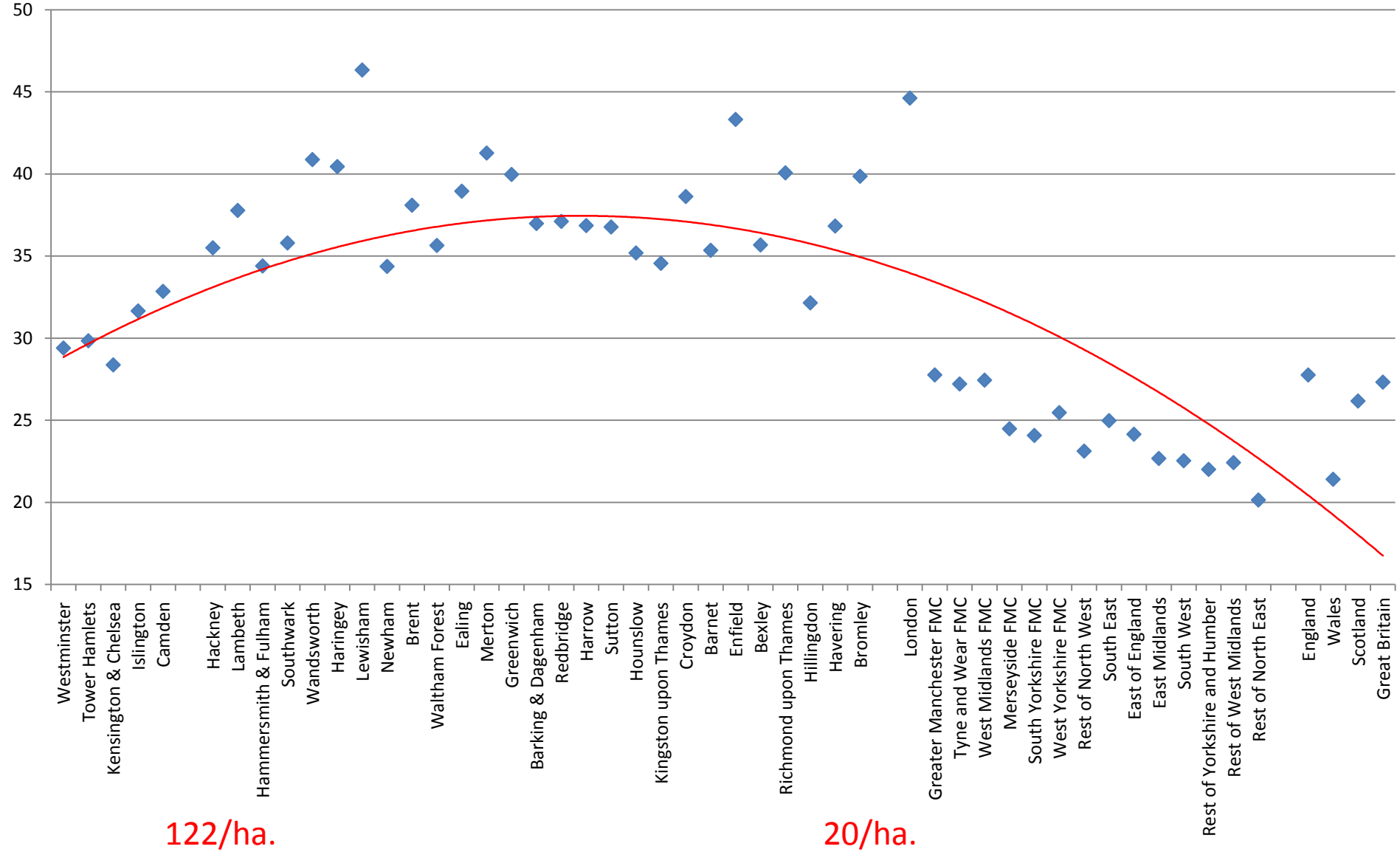
Source: Jin and Denman, forthcoming

Population density by Census ward area: London & surrounding regions 2001



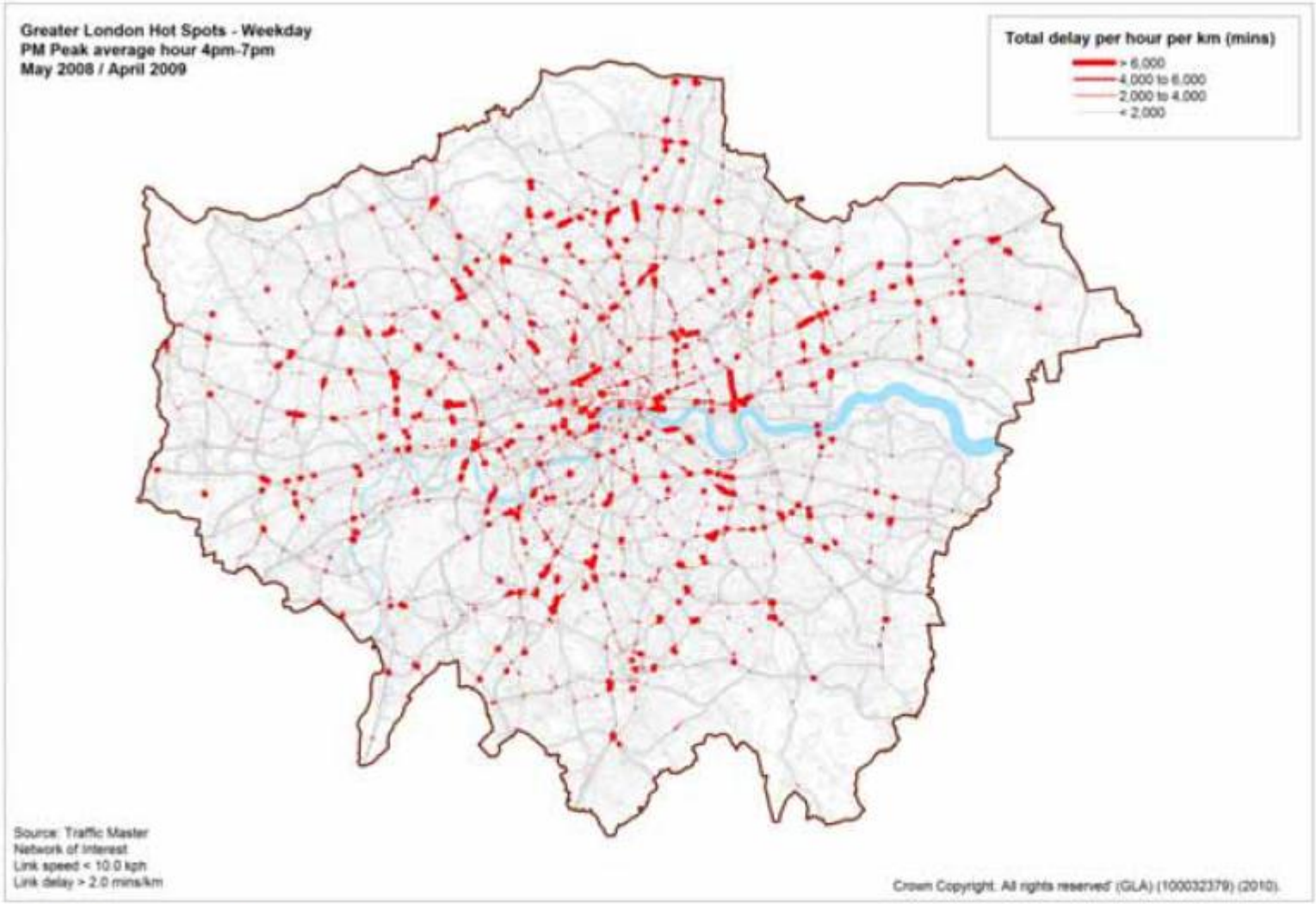
Source: 2001 Census: Standard Area Statistics; Boundary Data
Graphics: Dr Alex Hagen-Zanker

Residents' commuting time (home to work, minutes, c2009)

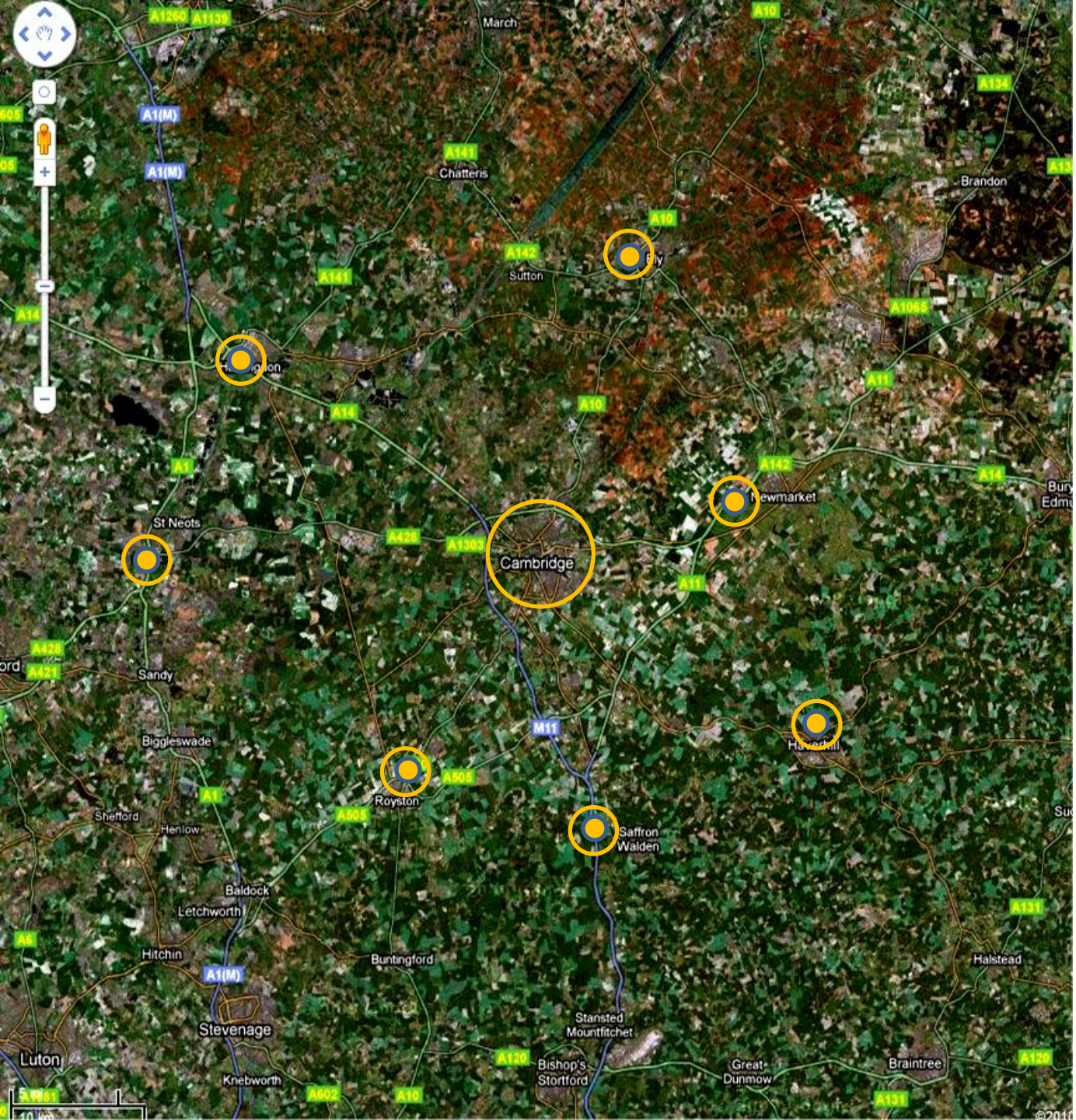


Sources: London data to the left: Transport for London;
London and GB data to the right: National Travel Survey

Figure 4.11 London congestion hotspots - weekday PM peak period.



Source: TfL, based on data from Trafficmaster.



Hypothetical examples of development

Station Hub A:
One of many options
being tested

Source: Jin, Denman and Ma, 2011

Station Hub B:
One of many options
being tested

Source: Jin, Denman and Ma, 2011

Station Hub C:
One of many options
being tested

Source: Jin, Denman and Ma, 2011

Station Hub D:
One of many options
being tested

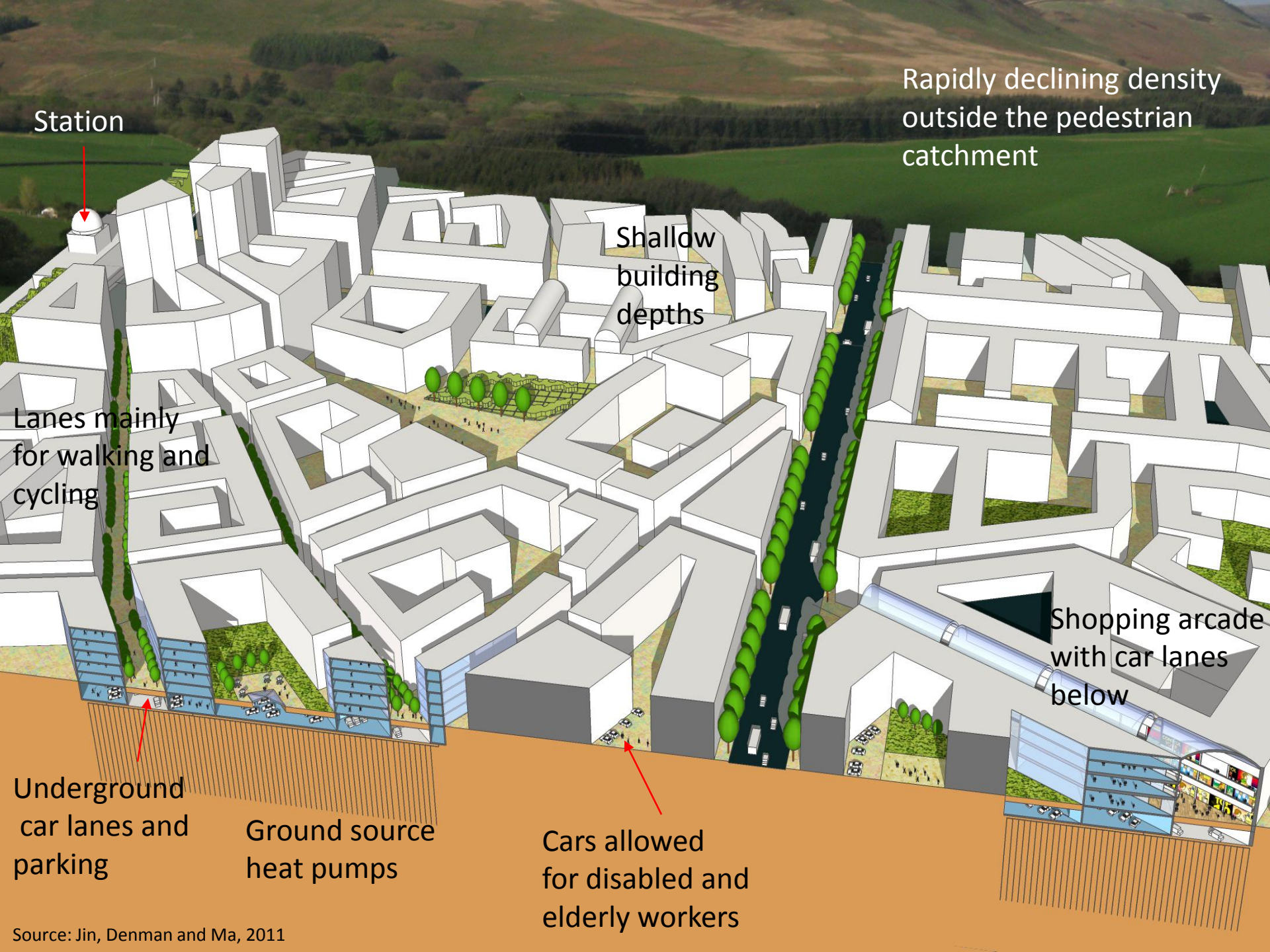
Source: Jin, Denman and Ma, 2011

Station Hub E:
One of many options
being tested

Source: Jin, Denman and Ma, 2011

Station Hub F:
One of many options
being tested

Source: Jin, Denman and Ma, 2011



Source: Jin, Denman and Ma, 2011