

Appendix A: Data Development and Sources

Spatial resolution

The spatial resolution used in the analysis are land parcels of 1 x 1 km aligned to the Ordnance Survey British National Grid, with each 1 x 1 km parcel representing a single landowner. The case study region contains 5280 parcels and each land parcel contains data from four spatially referenced datasets covering land classification, crop distribution, housing values, and wading bird abundance and distribution. Where possible datasets from 2017 are utilised.

Value of agricultural land

The value of agricultural land was calculated using gross margin data for crops and livestock from the SRUC Farm Management Handbook (Beattie, 2019). The gross margin for any agricultural activity is the per-hectare revenue minus the variable costs associated with producing that output. For crop data, crop coverage is derived from the Land Cover plus Crops map and combined with the crop gross margin data from the SRUC Farm Management Handbook. Gross margin values are given for each crop type per ha on a productivity range from low, medium to high yield. To account for differences in yield, data on soil quality at the 1 by 1 km resolution was derived and linked to the crop distribution. For livestock, data was sourced from the England Agricultural Census which details the number of livestock by type at the 5 by 5 km grid resolution. Using the livestock gross margin data from the SRUC Farm Management Handbook, the total gross margin for all livestock at the 5 by 5 km resolution was calculated. This was then disaggregated to the 1 by 1 km resolution.

Value of land for new development

There are no publicly available datasets on the value of undeveloped land in the UK. This is a direct result of the decision of the UK Government's Valuation Office Agency (VOA) to cease to collect and publish its land price indices in 2011 (Cheshire, 2014). Consequently, to determine the value of land for new housing we created a proxy dataset.

From UK Government and industry reports, it has been estimated that the value of land represents between 30% and 50% of the price paid for residential property (HM Government 2018). Consequently, we take the land value as 50% of the mean house price in each 1 km land parcel. HM Land Registry publishes transaction data for all residential properties sold from 1995 onwards and this is made available at postcode district. The average size of a postcode is 53 km². Property prices were first converted to 2017 prices using the Bank of England's RPI figures (this is the preferred inflation measure for house prices within the UK as used in the House Price Index). The average house sold price for each postcode sector was then calculated. This data was overlaid with the 1 x 1 km land parcels in ArcGIS. This allowed the average sold price for each land parcel to be derived.

Data Sources

British Trust for Ornithology Breeding Bird Survey

Many thanks to the British Trust of Ornithology for supplying 2016 and 2017 Breeding Bird Survey Data for oystercatcher, curlew and lapwing. The BTO/JNCC/RSPB Breeding Bird Survey is a partnership jointly funded by the British Trust for Ornithology (BTO), Royal Society for the Protection of Birds (RSPB) and the Joint Nature Conservation Committee (JNCC), with fieldwork conducted by volunteers.

EDINA Agricultural Census

England and Wales Agricultural census data supplied by EDINA at the University of Edinburgh and the Department of Environment, Food and Rural Affairs (DEFRA) for England, The Welsh Assembly Government, or The Scottish Government (formerly SEERAD).

CEH Land Cover

Rowland, C.S., Morton, R.D., Carrasco, L., McShane, G., O'Neil, A.W., Wood, C.M. (2017).

Land Cover Map 2015 (vector, GB). NERC Environmental Information Data Centre

<https://doi.org/10.5285/6c6c9203-7333-4d96-88ab-78925e7a4e73>

CEH Land Cover® plus Crops

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Soil Quality - LandIS

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HM Registry House price data

Obtained from <https://data.gov.uk/dataset/4c9b7641-cf73-4fd9-869a-4bfeed6d440e/hm-landregistry-price-paid-data>. Contains HM Land Registry data (c) Crown copyright and database right 2018. This data is licensed under the Open Government Licence v3.0.

Ordnance Survey Open Data

Contains OS data © Crown Copyright OS Open Roads, OS Open Rivers, OS Terrain® 50,

Boundary-Line™, Code-Point® Open and 1:250 000 Scale Colour Raster, 2018

Appendix A Reference List

Beattie, Alastair. 2019. *The Farm Management Handbook 2019/20*. SRUC.
www.fas.scot.

Cheshire, Pail. 2014. "Having no public data on land prices is a real problem if we are to make sensible decisions about land release or scarcity". Available at:
<https://blogs.lse.ac.uk/politicsandpolicy/land-prices-the-dog-thats-lost-its-bark/>

Her Majesty's Government. 2018. "Land Value Estimates." Available at
<https://www.gov.uk/government/collections/land-value-estimates>