

City Level Energy Analysis (CLEAN) – Using Geospatial Information to Understand Urban Sustainable Energy Scenarios





About Energeo



- Formed in 2015
- Over 85 years combined geo-industry experience (Airbus DS, Blom, Bluesky International)
- Provide energy and sustainability focused insights and consultancy based on geospatial intelligence
- Offices in Coleshill (West Midlands) and in Harwell (Oxfordshire)
- Extensive partner network including Ordnance Survey, & formidable innovation record includes:-
 - ESA Funding and office space
 - Innovate UK funding
 - Satellite Applications Catapult collaboration and partnering
 - Ordnance Survey Partner and 'Geovation' Finalist 2016



About Energeo



- Utilise geospatial Big Data, Open Data and Machine Learning to simply and streamline the way we understand the world around us
- The data, technologies and methodologies we employ create scalable, repeatable products and services – *'anywhere, any size'*
- We uniquely integrate consumer and demographic information with geospatial data to bring the physical and social environments together
- The support and funding we receive from organisations such as ESA, Satellite Applications Catapult, and Innovate UK allow us to continually develop and improve the solutions we provide, and to develop new services

- Clients include:-

nationalgrid



CATAPULT
Satellite Applications





Why Do We Need Comprehensive Sustainable Energy Information?



- To create and implement public awareness and engagement programmes
- To build fuel poverty mitigation strategies
- To assess the energy efficiency of housing stock and property portfolios (MEEs)
- To deliver successful Energy Company Obligation (ECO) campaigns
- To analyse property eligibility for the revised Green Deal
- To facilitate direct marketing and targeted promotional campaigns
- To understand wider technology roll out and impact on grid infrastructure
- To identify current trends and 'quick win' opportunities
- To create realistic emissions reductions targets
- To future proof our urban areas and prepare them for technological advances
- To understand who and what . . .



What Are the Challenges?



- Understanding current and potential sustainable energy scenarios in urban environments is complex and time consuming
- Information is kept in discreet silos (Local Authorities, Private Landlords, Technology Installers etc.) making access and integration difficult
- Traditional methods of data collection – such as onsite surveys - are intrusive, expensive and take time
- Urban environments are dynamic, meaning existing data may not be relevant and new data becomes outdated quickly
- Comprehensiveness and provenance of data is unknown in many cases

How does CLEAN use geospatial information to help build an accurate, comprehensive, non-intrusive, cost-effective, up-to-date, scalable, repeatable sustainable energy dataset for an urban area?



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- Wide area, bespoke data capture (satellite/aerial imagery, LiDAR, thermal imagery)
- Accurate and regularly updated digital mapping data (Ordnance Survey MasterMap, UKMap)
- Integration with non-geospatial data such as B2B/B2C marketing information
- Non-intrusive, desk-based analysis
- Automation and machine learning



Clean Solar – Existing Installs



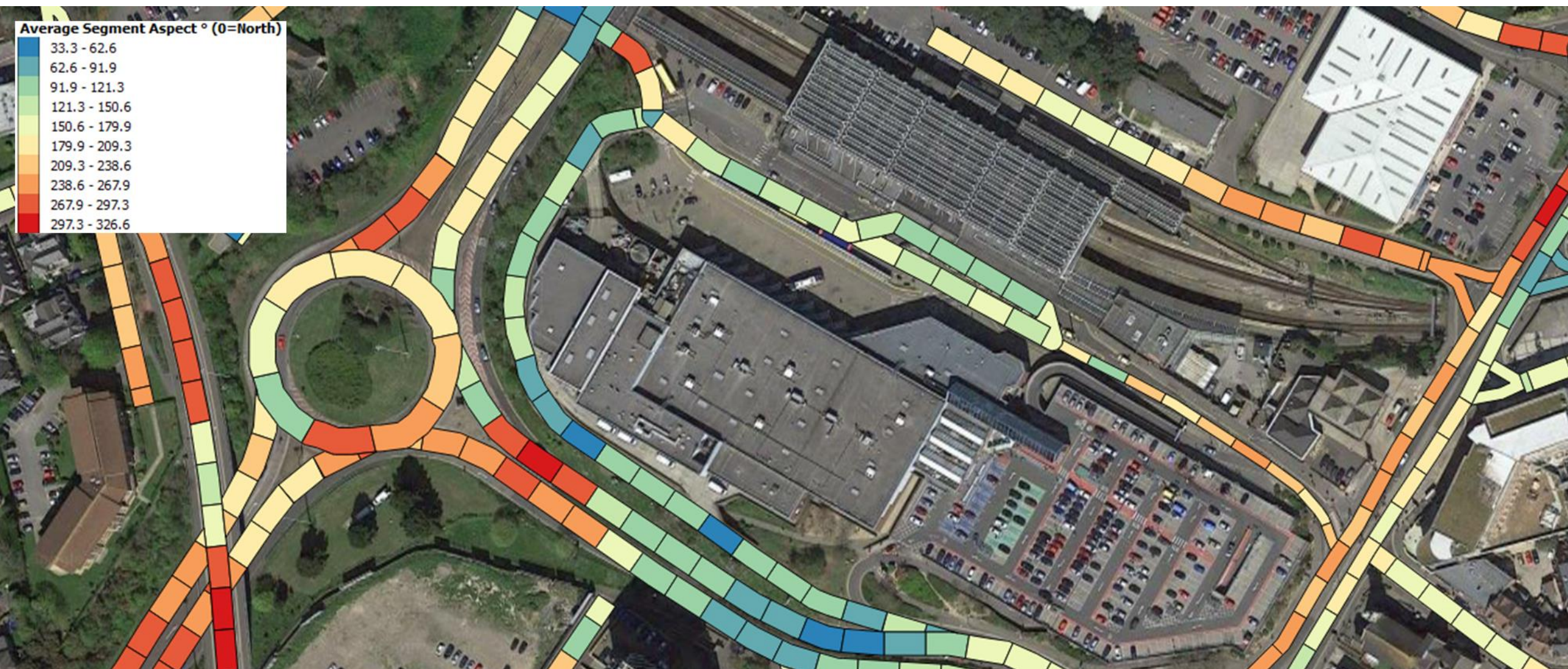


CLEAN Solar – Building Potential





Clean Solar – Highways Potential



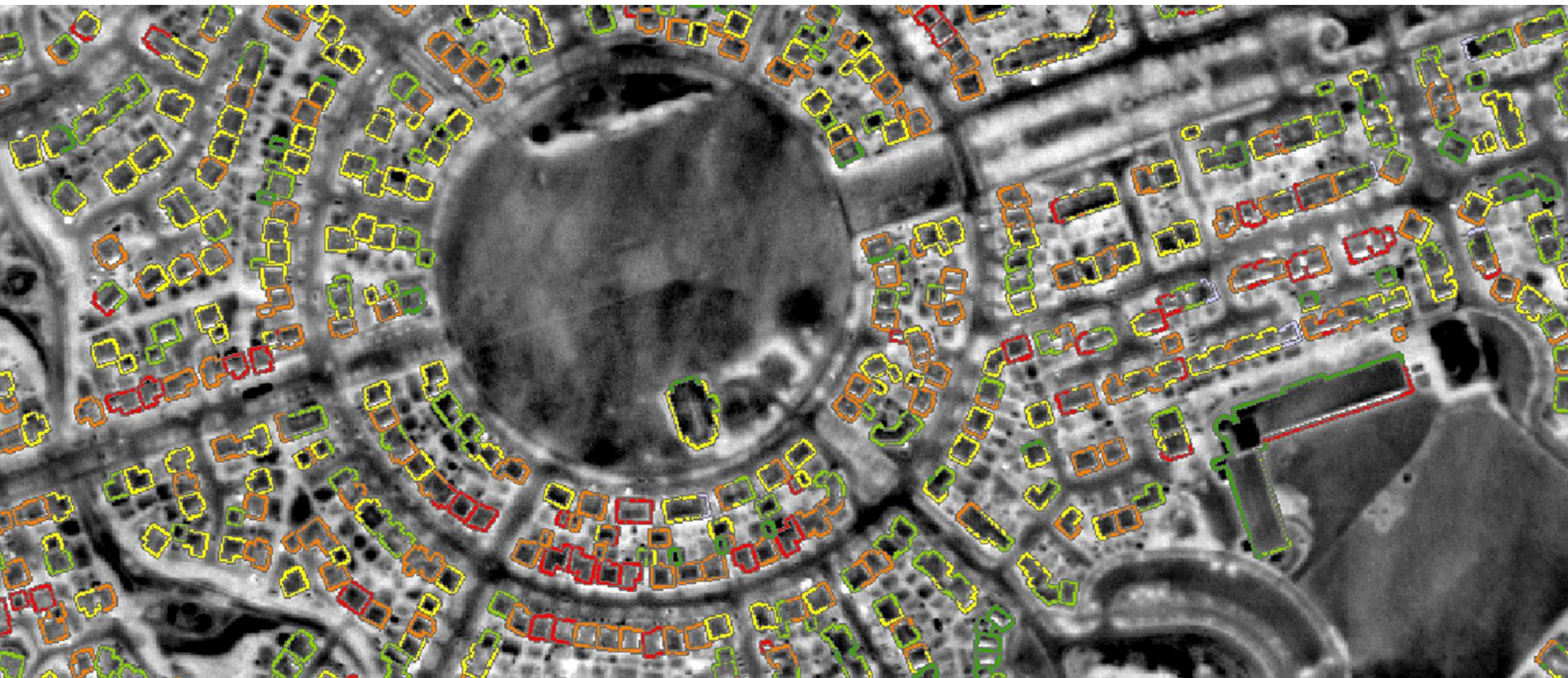


CLEAN Heat – Roof Heat Loss





CLEAN Heat - External Wall Heat Loss



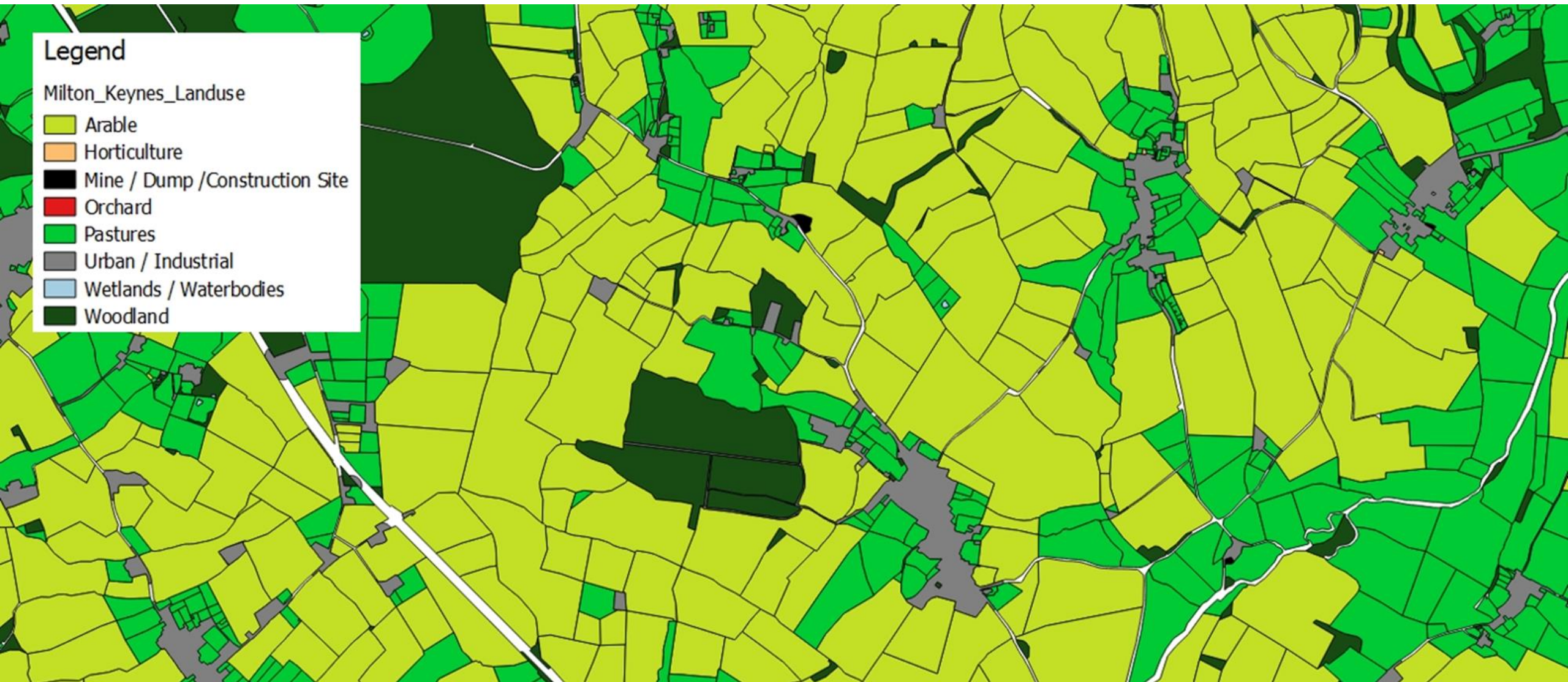


CLEAN Ground - Ground Source Heat Suitability





CLEAN Solar – Extra Urban Land Suitability







Building Type





Roof Material







Council Tax Band





The CLEAN Result . . .



For every building, geospatial information and analysis enables identification:-

- Existing solar
- Solar potential
- Roof and external wall heat loss
- Ground source heat suitability

UKBuildings provides critical additional information on:-

- Building age
- Building type
- Building materials

Ordnance Survey MasterMap or UKMap provides:-

- Postal addresses
- Building footprints

And B2B/B2C/Socio-demographic/Consumer data adds 'human' intelligence:-

- Property tenure
- Property council tax band
- Number of bedrooms, employment status, number of children and more



Any Questions?

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