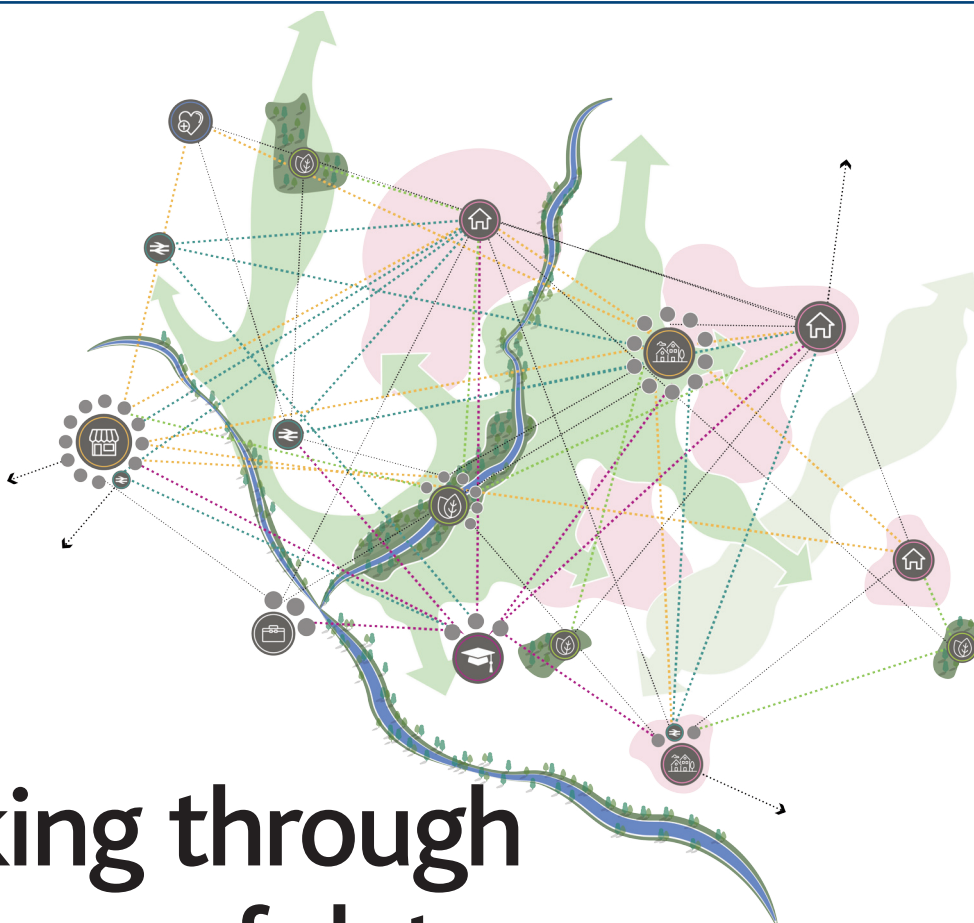


RIGHT:
Fig1 Data and Technology
connecting the different
layers of the city
(All images ©FARRELLS)



Looking through the lens of data

People need to
have an equal
part in the city
making process
says Alankrita
Amarnath

We live in a world that has come to be characterised by data and its constant exchange across a complex web of networks. These networks make the world a smaller place and connect people from far and wide. The growth of cities and urban living over the past decades has catapulted the potential of technology and data, giving citizens access to an abundance of information at an exponential rate. With a host of new opportunities through AI machine learning models and the ChatGPTs' of the world, there has never been a better time for architects to embrace the potential of technology and design a socially just future for this data driven world.

As a team at Farrells we are constantly investigating methods of integrating data science and analysis into our design pipeline. We are passionate about finding new ways the profession can adapt and improve with the changing times. One such initiative we have tested and developed is a Geographic Information Systems (GIS) framework to aid initial site analysis and allow for a nuanced understanding of the context and demographics of a place. Using open-sourced data has allowed this process to be immensely flexible and versatile.

Bringing and evidence base and depth to design

Cities are ecosystems that are made up of interconnected networks and entities (SEE fig 1 above). There are various layers within this ecosystem - be it a places' physical infrastructure, access to open space or the distribution of various uses. People constantly interact with these layers, and this gives each city, town and place its own unique identity.

Data and technology allow us to look at these layers through a magnifying glass. We are able to analyse the complexities of cities

and furthermore draw on inter-relationships between the various layers to better understand how one entity impacts the other. (SEE fig 2 overpage).

Using open-sourced and census data - right from the location of trees or the impact of flood zones on a site, to the understanding of income distribution and demographics of a region our team has been able to use GIS to approach a design problem with a keen understanding of the context. One such aspect we have been using data to better understand and test is the '15-minute city' concept that has been heavily debated over the past few months. Using GIS, we simulated our own model of the 15-minute city to understand how various layers of the city, like the access to public transport, access to food and open spaces impact and improve the livability of a region. Now each time we approach a new site we have the flexibility to add as many layers as we would like, to deepen our understanding of the region, because of the customizable nature of this model to suit specific contexts and demographics. (SEE fig 3 overpage).

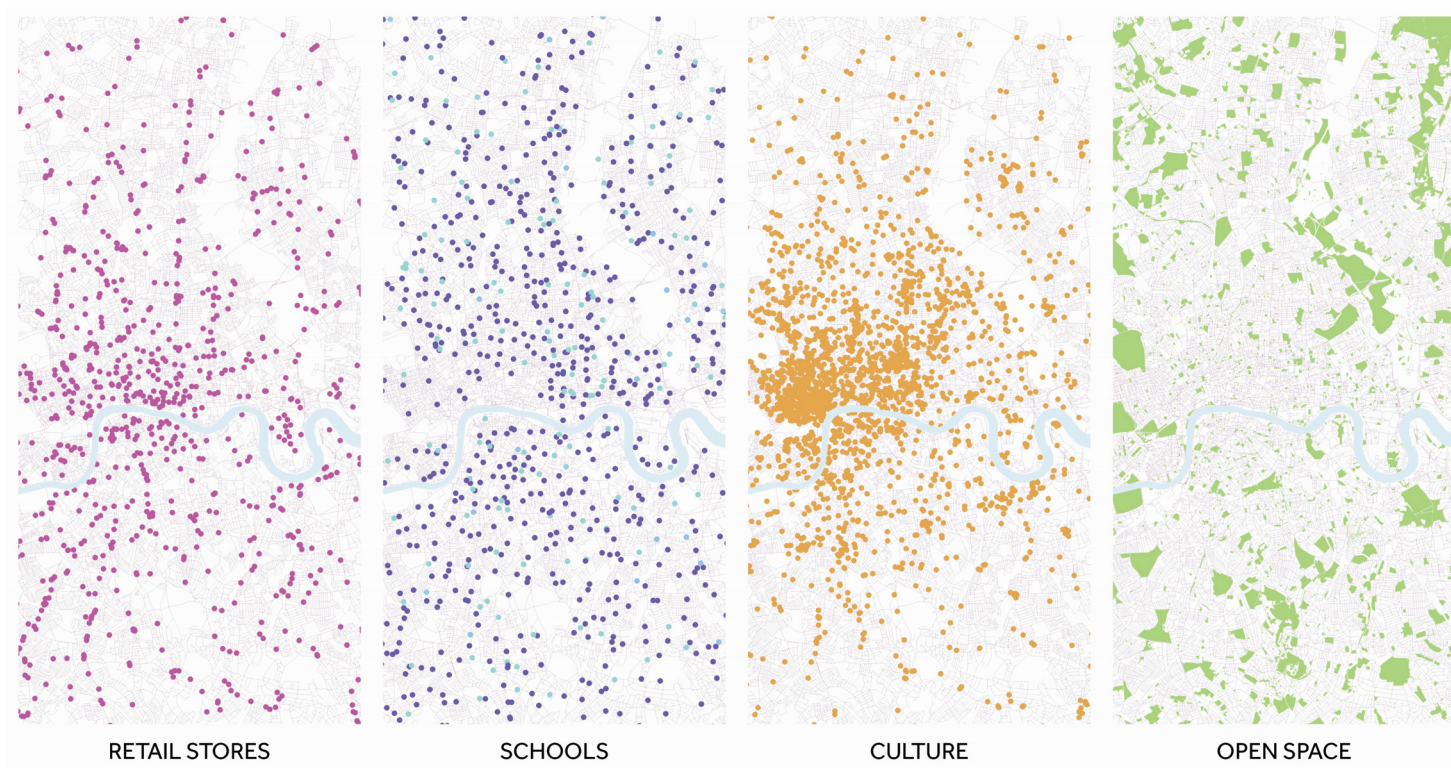
Data-driven design

Using data as a tool for geo-spatial analysis has been well documented. However, the ability to ask the right questions and put data to the test is where the future of design lies. Our process involves gathering data and processing it to be able to visualise the spatial qualities of any region. Once we have all the information in place, we iterate through a nonlinear process of tweaking data and adapting our proposals to understand our impact on the surroundings.

We developed this process further through our 15-minute city model where we have created a real-time test engine that not >>>



Alankrita Amarnath is an
Urban Design Assistant
with FARRELLS



ABOVE
Fig2 Visualising data and spatial analysis with GIS

RIGHT:
Fig3 A successful 15 minute neighbourhood





LEFT:
Fig4 Farrelles 15-minute city Model on GIS

only simulates how the access to public transport, retail offer, schools, open spaces and cultural venues contribute to a place's '15-minute score', it also allows us to input our masterplans, evaluate our impact and adapt our designs to better respond to the context and deliver what is missing in a region. Through rigorous testing of our proposals we can improve the 15-minute score of a region and ensure that the cities and neighbourhoods we design are accessible for all. (SEE fig 4 opposite).

We explored the notion of integrating technology into our design methodology further in our shortlisted entry to deliver a 21st century garden community for the Tendring and Colchester Borders Community with a vision to create a place where people aspire to live work and visit. Our concept 'Invisible City & Visible Community' – proposed placing people and community at the forefront of design, supported by the seamless integrated fabric of innovative building technologies, self-sustained homes and a network of digital social infrastructure that make up the invisible city. Using the power of modern technology to its full potential we created a space where community and nature can thrive, building sustainable systems for tomorrow. (SEE fig 5).

Making data accessible to all

With the vast network of the internet and artificial intelligence models generating new datasets everyday there is an abundance of information available out there. Above all, we as humans and our daily patterns – whether it's our tracked

smartphone usage, observations / posts on social media or even a check-in at a local café, we are constantly contributing to a large source of data. Thus, it has become vital to create data repositories that organize and collate all this information. Along with this, making the data collection process consensual and access to data equitable has never been more important.

We are moving fast towards a future where data is updated and exchanged by the second, having huge impacts on the built environment industry as well – with smart cities using technology to improve sustainability, economic development and enhance the quality of people's lives. It is now possible to design with detailed knowledge of the end user group, allowing spaces to be truly democratic and cater to every kind of user.

At Farrelles, we use GIS, open-source data and VuCity to test how our designs respond to real-life data and cityscapes. Using digital design tools from conception allows us to streamline the process, test different outcomes, coordinate with the rest of the team, and provide real-time data and output to inform design and client decisions. We pride ourselves in constantly pushing the boundaries of digital design. We have recently worked in pioneering digital design codes for the area around Hatcham and Ilderton Road, in collaboration with Southwark Council and VuCity. This paved the way for outward access to design codes and allows designers to iterate through the process and assess their impact on the surroundings. All while providing citizens insight, and the opportunity to shape the future of their community. (SEE fig 6).



INVISIBLE CITY

A Gentle Masterplan – blended into surrounding landscape and communities.

Increased Biodiversity – Habitat/wildlife corridors.

Connected – Provisions for multimodal and active transport.

Supportive of sharing economy, closing loop systems.

Digital, programmable, pioneer.

Atemporal – From measurable to long-term.

Facilitating positive health and wellbeing.

Engaging, Inclusive Accessible.

Productive Landscapes, Local Produce.

Carbon Neutral (for negative, why stop here?).

Distinguished Identity, **Sense of Belonging**.

Modular, Efficient, **Reusable**.

Urban Rooms – community-driven.

THE 4 SCALES OF INTERVENTION FOR A VISIBLE 21ST CENTURY COMMUNITY

Our vision for TCBGC is a vibrant, healthy, sustainable, resilient, carbon zero environment for future generations. We dream of a **seamless, integrated fabric of greens**, civic spaces, healthy streets, and liveable neighbourhoods that provide strong **sense of community**, free from the inconvenience and disruption of traffic, congestion, pollution, poor servicing, or unplanned infrastructure.

Our design philosophy is centred on collaboration, enabling wider social cohesion, pride and belonging from the onset; **focusing on the intangibles** while working with the physical/tangible aspects. It is like **looking through a window** into a new world we see what really matters, what are the values, what lies beyond the notion of time; the sense of community, the stories, the relationships, the identity, the memories.

It is about the 'why', not the 'how'.

The notion of an invisible city does not of course propose hiding away architecture. The vision is to integrate the **knowledge and technologies** of the modern world into a new built environment. Future homes, community facilities, businesses and shops will all be very real, well integrated into the fabric whilst the functional aspects of the 'city' become invisible through **great, sensible, and responsive design**.

The development is not a disruptor in the wider area, rather a **catalyst of positive change via cross-pollination** – building on what is there and growing a community integrated with Colchester, Tendring and Essex enabling much wider benefits. It is not only about creating a new Saliary Brook Country Park, but linking, extending, and improving the River Colne Valley from the centre of Colchester through Saliary Brook and beyond, east through Erinstead Market, south through Wivenhoe.

VISIBLE COMMUNITY

Valleys are the connectors, providing not only a place for needed physical infrastructure such as cycling/walking routes, sustainable drainage systems, productive and energy landscapes, but also for the wider social infrastructure, the intangible, consolidating a wider **network between nature, the new community, the city, the university and beyond.**

Looking past the red line boundary is the only way a truly sustainable place can be planted, and TCBGC will be a **key place of the puzzle**. Smart technologies and innovative infrastructure should be rolled out in conjunction to its neighbouring areas, encompassing the old and the new, blurring the edges. This is a truly large vision – talked about and tested for generations – and only now made possible.

The site offers an opportunity to grow a **21st century community**, learning from the past and avoiding the negatives often associated with new settlements. We begin by talking to people, capturing the unique qualities of the place, studying the landscape and surrounding neighbourhoods, reflecting the traditional logics of fields, patterns and grain that already exist for many good reasons. We respond to context with a unique environment that integrates into the landscape, preserving current quality of life of existing communities and improving their access to meaningful green space, nature, and new destinations. The new community will **touch the ground gently**, generate clean energy... reduce emissions... create visible communities, new memories... shift perceptions and behaviours.

Network of places beyond the red line boundaries, with the valleys as a physical connector

>>> To deliver successful cities and communities, people need to have an equal part in the city making process. It is indeed an inspiring time, aided by ever evolving technologies and abundant access to information that a variety of stakeholders can collaborate and contribute towards the future identity of place. People and their stories shape the cities we live in, and with technology bringing the world closer, more people are being seen and more stories are being heard. ■

ABOVE:
Fig5 Farrells shortlisted entry for Tendring and Colchester Borders Garden Community competition

RIGHT:
Fig6 Hatcham & Ilderton Road Digital Codes and Parameter Plans included in VU.CITY

