Cities are the powerhouses of a nation, socially, economically and imaginatively, yet Australia’s metropolises are all in their own ways groaning under fractured solutions to their biggest challenges.

The cities we have created and continue to create – the vast separation of home and work, the urban sprawl that dictates our lives – has profound consequences for health, social integration, productivity and the environment, according to Dr Tim Williams, Cities Leader for Arup in Australasia and currently on a National Cities Reference Group.

He will also be chairing a strand on Smart Cities Initiatives for the NSW Government.

“For instance [the Sydney sprawl] is fundamentally exclusive and wildly unproductive in the very places where almost 90 per cent of the populace lives and where almost a trillion of our annual GDP is generated,” Dr Williams says.

“The future planning of Australian cities should be data-driven and responsive – not just about numbers and technology but what makes a city tick – its people, its environment,” he says.

“Future city planning is not just about numbers and technology but what makes a city tick – its people; inset, Tim Williams. PHOTO: MAIN, NOAH SHELTON

“Power to the people for future city scapes”

Dr Williams’ fingerprints are all over the signing of the Metro Sydney and Western Sydney City Deals (a concept he brought to Australia in 2010), a 20-year policy tool that began London’s revitalisation and unlocked that city’s enormous human potential evident today in its inclusive institutions and breathing CBD. He believes Sydney could be on the way to the future, already having innovated to an extent with the first metro-scale planning body. The Greater Sydney Commission and Western Sydney have also put their respective hands up for a City Deal.

“I would urge other states to look at that, because it attempts to achieve the one critical thing that can put us all on track – bringing land use and transportation together,” Dr Williams says, adding this also happens to be the answer to the nation’s other abiding dilemma – productivity.

“There is a very unproductive city flow, so getting tighter integration, higher density, better connectivity and better public transport connectivity means giving back village living in the city and reclaiming billions of lost hours every week. Because we are currently creating places that are unwalkable, it means people lose that from their lives . . . to work, to school. Consequently we see an explosion in sedentary illnesses and conditions.”

According to the Bureau of Infrastructure, Transport and Regional Economics, the social cost of congestion in Sydney is expected to grow from $6.2 billion in 2015 to $12.6 billion in 2030. While Australia’s recent urban infrastructure investment, particularly in Sydney, has been massive, Dr Williams says it is not enough.

“We’ve been playing catch-up,” he says. “Australian cities have a lost generation of infrastructure investment since the 1970s. Why have an infrastructure boom unless that boom is an explosion of smart infrastructure – data corridors that pour constant invaluable and renewable data that a city can then leverage to better manage itself?”

Dr Williams says Australian cities have been slow learners because while we are producing a massive amount of knowledge-rich data, there is no, one city-wide body or city government – unlike Chicago or Barcelona – empowered to gather that data.

“Every piece of infrastructure commissioned by state governments needs to be smart infrastructure – part of the internet-of-things (IoT), the census world, every time we lay a mile of road or rail it should be a sensor corridor, a data rich corridor that feeds back in to how we design and manage infrastructure.”

Arup is a multi-national professional services firm, with its headquarters in London, which provides engineering, design, planning, project management and consulting services for all aspects of the built environment.

Founded by Sir Ove Arup in 1946, the firm has more than 14,000 staff based in 92 offices across 42 countries, and is present in Africa, the Americas, Australasia, East Asia, Europe and the Middle East.

Arup has participated in projects in more than 160 countries.