Australia is currently witnessing a significant and relatively unplanned population growth. This growth is increasingly exerting pressure on urban areas, infrastructure and the fragile ecologies of the Australian continent. Concurrently, as signatory to the internationally binding United Nation agreement of the Convention on Biological Diversity a ubiquitous target of 10% protected area across the nation's ecoregions must be maintained or created where lacking in coverage.

This research project case study argues for the benefits of a designed ecological network – the National Green Network – promoted as counterpoint to this rapid growth and crucial in securing the future ecological, environmental, social and economic resilience of Australia. While a multitude of benefits from such a plan are foreseeable, the central message posited is that planning of this type ideally should precede city expansion.

The significance of this research lies with its design methodology. This design project explores key targets as yet not explored for Australia and provides a design framework from which a new understanding of landscape planning and landscape can be considered. This includes questioning the potential of planning at a continental-scale; the utilisation of various technologies including Geographic Information Systems; and refinement of design ideas through a design charrette.

The big challenges outlined in Made in Australia command a set of solutions. This design project adds to this dialogue at the national scale. Its inclusion in this crucial text about Australia's future supports its value.
A NATIONAL GREEN NETWORK FOR AUSTRALIA
SIMON KILBANE

An interconnected network of natural areas and other open spaces that conserves natural ecosystems and functions, sustains clear air and water, and provides a wide array of benefits to people and wildlife ... green infrastructure is the ecological framework for environmental, social, and economic health – in short, our national life-support system.1

This essay summarises research into the planning and design of a national green network for Australia: the National Green Network. This is a framework which can provide greater resilience for our landscapes, towns and peoples, in a country facing significant population growth, land conversion and the impact of climate change. This trans-continental system extends the notion of ‘infrastructure’ from ‘grey’ to green, from ports, roads and telecommunications to the health of our landscape systems. Without a healthy landscape this nation will not survive.

The Convention on Biological Diversity (CBD), of which Australia is a signatory, requires setting aside a minimum 10 per cent of terrestrial biomes as protected areas, lands legislated primarily for the protection of biodiversity.2 In line with this agreement, the Australian federal government endorses a ‘Comprehensive, Adequate and Representative’ National Reserve System (NRS).3 However, despite this mandate, currently only 42 per cent of Australia’s 85 bioregions have this minimum degree of protection.

To ensure the future of Australia’s biodiversity, the NRS needs to be increased to meet these minimum targets, but also, such areas need to be interconnected. Despite some debate in the scientific community,6 ecological connectivity has been embraced within specific policies at state and national level such as the National Wildlife Corridors Plan Draft and Australia’s Biodiversity Conservation Strategy 2020–2026,7 which explicitly embrace connectivity as policy.

Worldwide, the popularity of ecological networks, greenways and green infrastructures is evident from local and regional initiatives to country-wide and even continental schemes.8 To Europe and North America, bold planning moves such as the Pan-European Ecological Network (PEEN) or the Wildlife’s Project (USA) attempt to plan for biodiversity protection and mobility via protected areas networks, to theoretically provide continental-scale landscape connectivity. Such projects often employ persuasive mapping and graphics where geographical

distance, land-use, boundaries and tenure are frequently disregarded through macro ‘merry’.

Currently, the science, global practice and supporting policy, the actual spatial planning or application of these principles to the Australian landscape has been limited. Ideally, for Australia to meet its international obligations and to have a truly resilient ecology, it would require our own distribution of interconnected protected areas across the nation. The intent of this research is to explore how this could occur if we are serious about connection and our obligation to the CGI suggests that what we are doing could look like.

The research method, illustrated on previous page, explains how the new green infrastructure, the National Green Network (NGN) could be configured as a vital new infrastructure, equally important as rail, road or broadband infrastructures. The NGN is designed according to two guiding principles:

- **10 PER CENT OF AUSTRALIA’S EDITIONS**: In accordance with the International Convention on Biological Diversity (CBD), a minimum 10 per cent of Australia’s existing bioregions must be protected. This means that protected, associated areas, such as land classified primarily by the protection of biodiversity, should be evenly distributed across the entirety of Australia’s landscape.

- **ECOLOGICAL CONNECTIVITY**: The spatial configuration of protected areas should maximise ecological connectivity, maintaining or reconnecting otherwise isolated fragments of existing habitat and hence maximising the potential for genetic exchange.

The research creates and evaluates the proposed NGN through increasingly fine resolution over three scales: continental, sub-regional and fragmentation. At each scale, the further resolution and move from abstract to real occur. The system of national green network begins as a hypothetical (policy) grid of protected areas across the entire landscape of the nation. This grid is 25 km wide. Its bandwidth is 1,290 metres and is scaled accurately to represent an allocation of remnant vegetated land, protected to meet our commitments to the CBD. This mechanistic approach of course ignores any appreciation of the existing landscape but it is not intended as a plan, it simply articulates policy and represents an allocation of space to biodiversity. The project then becomes one of adjusting this grid across the nation to meet local specificity.

To test the practical connectivity of such a national network, a 25 km wide and 1,250 km long transect establishes a detailed study area. This transect includes representation of the typical range of Australian land uses from ‘urban’ to ‘wilderness’ over the breadth of its

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A NATIONAL GREEN NETWORK FOR AUSTRALIA

Made in Australia: The Future of Australian Cities
Richard Weller, Julian Bolleter
The University of Western Australia Publishing
Paperback | 318pp | $49.99

Made in Australia (MIA) is a refreshingly ‘big picture’ book that asks the question critical to the next one hundred years in Australia, where do we fit the extra 20 million people currently not planned for?

Two options are outlined: four megacities with populations of 10 million plus, or, alternatively, a number of new cities. Both options are diagrammatically and historically shown to be high velocity if our cities are to remain viable and productive, with a national population of over 60 million by 2100. A new vision is proposed from megalopolis.

An international would have it, in reading MIA over a few days spent on the Panhandle of Florida (also known as SoFlo), it is intriguing to draw comparison between SoFlo as one of the forty global megaregions, as defined by US urban studies theorist Richard Florida, and to that of the models outlined in MIA. SoFlo is 600 kilometres long with a population of 15.1 million and includes five large cities sheltered along an almost continuous urban settlement.

Driving around guided by smart phone navigation, visitors are constantly directed back to the ten-lane freeway, the I-95, moving between the high-hedged homes of Palm Beach and the high-rise concrete buildings of Miami Beach, via gated golf courses nestled communities. The I-95 is the infrastructural backbone that enables Miami to function. It is part of the Interstate Highway System in the US, a super grid of freeways built across the country from 1955 and costing (on the 2006 matrix) US$425 billion. It is probably the defining infrastructure project of this century. Weller states that it “is key to bringing megaregions… [i.e.] enable decentralisation and simultaneously enhance economic agglomeration”. China has built almost 10,000 kilometres of HSR in two decades and plans to increase that to 30,000 kilometres by 2020.

High-speed rail (HSR) is likely to be the defining infrastructure project of this century. Weller states that it is “the key to bringing megaregions… [i.e.] enable decentralisation and simultaneously enhance economic agglomeration”. China has built almost 10,000 kilometres of HSR in two decades and plans to increase that to 30,000 kilometres by 2020.

The Australian Federal Government is currently considering a $114 billion estimate for a 1,750-kilometre Brisbane to Melbourne fast train. MIA names this area the East Coast Megaregion, which, along with a west coast HSR-based megaregion and increased settlement in The New North around Darwin, is the spatial proposition of the book.

Supporting evidence
A National Green Network for Australia

Weblinks: