

Australian Environmental Planning

Challenges and future prospects

Edited by

**Jason Byrne, Jago Dodson and
Neil Sipe**

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Australian Environmental Planning

Australians from all walks of life have begun to realise the nation's cities cannot sustain profligate growth indefinitely. Dwindling water supplies, failing food bowls, increased energy costs, more severe bushfires, severe storms, flooding, coastal erosion, rising transport expenses, housing shortages and environmental pollution are now daily news headlines. Australia's cities may have reached their ecological limits: a new model for planning the places we live is needed.

Understanding the natural cycles of the city is just as important to planning our cities as knowledge of local ordinances, indeed much more so. A profound knowledge of environmental processes is critical for successful planning in today's world. Environmental planners take as their guiding principle the concept of designing with nature, approaching cities as living organisms that consume water, energy and raw materials, and produce waste. This metabolic view of cities means we can find new solutions to old problems, and steer our cities towards a more sustainable form of planning.

Written specifically for students and professionals working in city planning in Australia, this ground-breaking new book enables Australian planners, architects and developers to get a better understanding of the fundamental principles of environmental planning for cities, showing how land, water, air, energy, wildlife and people shape our built environments, and how in turn environmental processes must be better understood if we are to make informed decisions about developing cities that are more sustainable.

The book's coverage is comprehensive: from an overview of the concepts and theories of environmental planning, through analysis of governance systems and urban environmental processes to agendas and policies for the future, all the key topics are covered in depth, with recommendations for supporting reading. Ideal for students, essential for professionals, *Australian Environmental Planning* is vital reading for more sustainable cities in a more sustainable world.

Jason Byrne is a Senior Lecturer in Urban and Environmental Planning in the Griffith School of Environment, Griffith University, Gold Coast campus, where he has taught since 2006. A geographer, anthropologist and planner by training, Jason's research interests include: urban nature, parks, green-space, environmental justice and political ecology. Jason previously worked as a planning officer, environmental officer and policy writer with the Western Australian government.

Neil Sipe is the Deputy Director of the Urban Research Program at Griffith University. He currently serves on the Transportation Research Board Ferry Committee and the Social and Economic Effects of Transportation Committee and is the Editor of the peer-reviewed journal *Australian Planner*.

Jago Dodson is Director of the Urban Research Program at Griffith University, Brisbane. Jago has applied his background in anthropology and urban planning to a raft of urban problems and questions, often with a social or institutional dimension. These include housing, transport and metropolitan planning. Jago teaches a course on Understanding the Australian City in the Urban and Environmental Planning program at Griffith. He has published widely in both academic and public venues.

Dedicated to the First Nation Peoples/Traditional Custodians of Australia

Contributors

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Foreword

Ian Douglas

People have long recognised that cities function as ‘consumption systems’, importing materials, energy and water, and exporting goods, waste, excess water and chemicals in gaseous, liquid and solid forms. Urban areas also provide habitats for all kinds of organisms, some of which are introduced by consumption processes, and some of which are native to the original landscape. While the biodiversity of urban areas differs from surrounding areas, it tends to be at its highest in the transition between newly urbanising areas and relicts of previous landscapes. This is because in urban areas, modifications to climate, hydrology, soils and landforms produce a range of impacts on flora and fauna, many of which cannot be tolerated by original species. However, novel assemblages of plants and animals arise in urban areas, via spontaneous plant colonisation of unused and derelict urban land, through creative conservation that reintroduces wildflowers and native plants to urban green-spaces, and through gardening and other activities undertaken by urban people. In this way, urban areas become unique ecosystems, deserving scientific study.

One of the earliest studies of an urban ecosystem was Volume Seven of the Proceedings of the Ecological Society of Australia (1972) which was devoted to examining Sydney as an ecosystem. This led to the pioneering work of Boyden (1982) and others, on Hong Kong (*The Ecology of a City and its People*), probably the first study of an urban area as a socio-ecological system. These pioneering Australian contributions set the tone not only for the United Nations Educational Scientific and Cultural Organisation (UNESCO) Man and Biosphere Program’s Project 11 on urban areas, but also indirectly for the United States National Science Foundation-funded Long-Term Ecological Research projects on Baltimore and Central Arizona (Phoenix) in the USA. While such projects have analysed urban metabolism and all its ramifications, highlighting problems and injustices, they have not pushed further, failing to identify ways out of the difficulties posed by urban growth, pollution and congestion. Specifically, there has been a missed opportunity for engaging with government, governance and the planning processes.

The Green Bans led by Jack Munday in Sydney in the 1970s were one such form of engagement in the planning process, where building workers refused to work on projects that would harm, blight or degrade parts of the city that they deemed valuable, distinctive or special. The growth of civic societies and heritage groups in urban areas, and national parks associations and other nature conservation bodies, concerned particularly with conditions on the fringes of major conurbations, is another example. Such groups have set the scene for strong public feeling about the directions of urban growth, and the protection of both the built and the natural heritage of cities, which given them their character and sense of place. While these changes have gradually begun to reconfigure the planning process, all too often the environment remains something of an ‘add-on’ to, or a cumbersome additional step in, the development approval

process. Although big projects are typically now required to have environmental impact assessments, seldom have planners and decision-makers considered the accumulative effects of a succession of projects across a range of scales. This is a difficult task, because it requires planners to have a broader knowledge outside the confines of traditional disciplinary boundaries.

Such knowledge requires better integrating the goals of development with the needs of people, other species, and entire ecosystems, and typically has been the preserve of environmental science. Until recently, the education of planners, engineers and other built environment professionals has lacked a significant environmental science component. While this is changing, the nature of environmental science education varies enormously across institutions. One can ask whether it is preferable to have planners educated within planning programs that span different ways of thinking but are taught by members of a single school or department, or if it is better to have planning students take classes led by people from chemistry, biology, earth science, economics, politics, geography and sociology – all of whom are, in their own ways, immersed in environmental issues. Either way, students need teaching materials that: bring diverse viewpoints together; fully explain various aspects of particular planning problems; consider cultural attitudes, legislative impediments, and government structures; and present students with new ways of building, managing and governing cities to improve health and quality of life while reducing environmental injustice and promoting the integrity of biophysical systems.

This book provides such a range of material. Reading it, I feel the enthusiasm and commitment of the writers and the dedication to rethinking the ways things have traditionally been done, to breaking the conventional mode of sprawling suburbs and motor car dependency. The range of ideas and solutions presented will excite the reader and give hope to future generations. Not only as we build, so shall we live, but as we build cities today, so our grandchildren will be living in 50 or more years' time. The urgency expressed in this book should not be ignored. It should inspire future planners and future environmentalists to make the necessary changes for cities to become healthier for all their inhabitants (human and non-human), changes that will contribute to biodiversity, will avoid increases in greenhouse gas emissions, and that will make cities of the future exciting, elegant, efficient, salubrious, fair and desirable places that nurture a multitude of life-forms, livelihoods and lifestyles.

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Abbreviations

4SM	4-step model
ABS	Australian Bureau of Statistics
ACA	Australian Coal Association
ACF	Australian Conservation Foundation
ACT	Australian Capital Territory
ADR	Australian Design Rule
ALR	Australian Law Reports
APPEA	Australian Petroleum Production and Exploration Association
AQI	air quality indices
AURIN	Australian Urban Research Infrastructure Network
BCAS	Brisbane Clean Air Strategy
BSUD	biodiversity sensitive urban design
CAEPR	Centre for Aboriginal Economic Policy Research
CBD	central business district
CHC	Commonwealth Housing Commission
CHP	combined heat and power
CI	costs of inaction
CLR	Commonwealth Law Reports
CMA	Catchment Management Authority
CO ₂	carbon dioxide
COAG	Council of Australian Governments
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CVD	cardiovascular disease
DF	development/design functions
DOAS	Differential Optical Absorption Spectroscopy Systems
EDR	Eco-positive Design Reporting
EIA	environmental impact assessment
EIS	environmental impact statements
EPBC	Environment Protection and Biodiversity Conservation
EPHC	Environmental Protection and Heritage Council
EROEI	energy return on energy investment
EROI	energy return on investment
ERP	electronic road pricing
ESAA	Electricity Supply Association of Australia
ESD	ecologically sustainable development

ET	ecological transformation
EW	ecological waste
FOE	Friends of the Earth
GDP	gross domestic product
gha	global hectares
GHG	greenhouse gases
GIS	geographic information systems
GOD	green oriented
GPS	global positioning system
HEU	highest ecological use
ID	institutional design
IE	industrial ecology
IGAE	Intergovernmental Agreement on the Environment
ILUA	Indigenous Land Use Agreement
IPA	Integrated Planning Act
IND.PA	Indigenous Protected Area
IPCC	Intergovernmental Panel on Climate Change
LED	light emitting diode
LGA	local government authority
LiDAR	light detection and ranging
LPG	liquefied petroleum gas
MDBA	Murray–Darling Basin Authority
MDBP	Murray–Darling Basin Plan
MPE	master-planned estate
NCDC	National Capital Development Commission
NEPA	National Environment Policy Act
NEPM	National Environmental Protection Measure
NGO	non-governmental organisation
NGS	National Greenhouse Strategy
NHMRC	National Health and Medical Research Council
NPI	National Pollutant Inventory
NS	negative space
NSESD	National Strategy for Ecologically Sustainable Development
NSW	New South Wales
NSWLEC	New South Wales Law Reports
OECD	Organisation for Economic Co-operation and Development
PD	positive development
PEC	Planning and Environment Court
POD	pedestrian oriented
POOO	People Opposed to Ocean Outfalls
POP	persistent organic pollutant
ppm	parts per million
PPP	public–private partnership
RMIT	Royal Melbourne Institute of Technology
RT	resource transfer
QCA	Queensland Court of Appeal
QPEC	Queensland Planning and Environment Courts

SCCC	Select Council on Climate Change
SE	source of energy
SEQ	South East Queensland
SPA	Sustainable Planning Act
STM	SMARTmode (Systems Mapping And Re-design Thinking)
STOP	Stop the Ocean Pollution
TDM	transportation demand management
TEOM	Tapered Element Oscillating Microbalance
TOD	transit-oriented development
TWS	The Wilderness Society
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCHE	United Nations Conference on the Human Environment
UNESCO	United Nations Educational Scientific and Cultural Organisation
UNFCCC	UN Framework Convention on Climate Change
UNSW	University of New South Wales
US	United States
UTMS	urban transport model system
VAMPIRE	vulnerability assessment for mortgage, petroleum and inflation risks and expenditure
WA	Western Australia
WASAT	West Australian State Administrative Tribunal
WECD	World Commission on Environment and Development
WSUD	water sensitive urban design

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