



Habitat Thinking:

*We inherit our habitat
Tomorrow's habitat is determined today
It is our responsibility to manage change
Our habitat is a source of:*

- Resources,
- Scientific information
- Refreshment and renewal

From *A Policy for Conservationists* by G. L. Kesteven (1968)

SUBMISSION TO PLAN MELBOURNE

PREPARED BY HABITAT MELBOURNE TRUST

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Submission by The Habitat Melbourne Trust
following the publication of
PlanMelbourne: Metropolitan Planning Strategy
State Government of Victoria, October 2013

This submission is in four sections dealing with different aspects of PlanMelbourne.

Section 1 presents an overview of the critically important role of Melbourne within the South East of continental Australia and presents the implications of that situation for the future of Melbourne and Victoria.

Section 2 looks at growth projections (and reasons) together with recommendations that follow.

Section 3 draws on the commitment of PlanMelbourne in the peri-urban areas and argues for the reformulation of these principles for application to the urban areas.

In conclusion, Section 4 identifies the challenges and opportunities of ecosystem repair, maintenance and continuity within the urban area and beyond.

Section1

MELBOURNE PLANNING STRATEGY

Response from Ross Mellor OBE JP, Founder, Co-ordinator and Facilitator of the Habitat Melbourne Trust in company with other Papers prepared by members of the Habitat Trust¹

This response is itemized in bullet point form to raise serious historic, socio-economic, geographic land form factors, transport, climate change factors and State services and taxation which should make every citizen, let alone representative governments seriously consider the future of this great city and its very significant role in the development of Australia – in its national context within the Asian quadrant of planet Earth where over two thirds of the population currently live and where the infrastructure standards and socio-economic living standards are changing at a remarkable rate.

- Melbourne can no longer be considered in the isolation of a capital city in the “minute land mass” of the State of Victoria. A State that was apparently prosperous was established by the Colonial Office of Great Britain after the first settlement by free settlers arrived from Tasmania in 1835.
- The problems we face today were created by this unique settlement in South East Australia by squatters who within the space of a few years established land ownership across the very productive area now known as Victoria and the very productive plains of the Riverina of New South Wales within the area we know and identify today as the Murray Darling Basin. Check a map of South East Australia as verification of this point. The crucial limiting factor was the delineation as the border between the states of Victoria and NSW.
- The principle point of entry to this vast productive area in Australia was Port Phillip Bay from within which great prosperity was to be established with wool, crops and in time the gold rush.

It should be realized that other settlements which were established in Continental Australia were not only coastal based but also isolated from the hinterland by the mountain ranges of the Eastern Highlands – or isolated towns around the coastal fringe of a vast continent.

- The dynamic of the settlement of Melbourne and its effect upon the socio-economic development of Continental Australia is well

¹ In 1976 the United Nations held a major Conference in Vancouver Canada to discuss and raise major concerns about the sustainability of cities. Professor Allan Rodger, my wife Anna Mellor and I attended this significant conference. Records of the discussions and papers provided enhance the issues raised in the comments on the necessity to understand the essential factors in the development of major metropolis cities in continental land-masses.

illustrated by volumes of historical records in our great libraries and universities but is dramatically illustrated in a book recently published by Black Inc. entitled *"1835 The Founding of Melbourne and the Conquest of Australia"* written by James Boyce and can be used as a valuable reference.

The consequences of the outcomes of settlement in Australia through the settlement of Melbourne around Port Phillip and its ready accessible and viable links to the vast hinterland of Australia through the mountain chain to the Murray Darling Basin and the continuing links to Tasmania meant that from the very beginning Melbourne was a trading city servicing a larger proportion that we identify today as a 4 State hinterland – Victoria, New South Wales, South Australia and Tasmania.

- Melbourne as a Metropolis has grown around Port Phillip – irrespective of the sheer stupidity of statistical boundaries which tend to deny the geographic linkages of the Port Phillip Basin to the 4 State hinterland referred to above.
- The history of settlement, transport services, industry, health services, educational services etc. etc. clearly establishes the socio-economic history and activity that has created Melbourne as the metropolis it is today and the inevitable dynamics for the future.
- Note the development of the paddle steamer system to carry wool to Victor Harbour in South Australia for export to the UK to be replaced by railways throughout Victoria, New South Wales and South Australia by the Victorian Government to connect to the Port of Melbourne and Port Phillip.
- The decision to create the State of Victoria bounded by the Murray River to the north – a line to the west and a system entitled Bass Strait to the south has not achieved anything but a continuous bureaucratic failure over the many, many years to recognize that the people who live and work within the encompassment of the 4 State hinterland concept recognize Melbourne as a great service metropolis which continues to grow in international consequence almost against the artificial boundaries imposed by the Federal States and it is thereby hindered by a taxation and legal system that is borne of the Colonial office decision all those years ago yet has been continuously ignored by the people who use this great Metropolis built around Port Phillip as the natural service centre for South Eastern Australia.
- Unless the planning for Melbourne takes in the reality of the geography of its unique and significant location in Australia – we as Australians – not just Victorians, will face a task of growing magnitude to build a city – a metropolis which services Australia – not just a State which is rapidly becoming a One City System.

- Melbourne is now a metropolis which requires many city systems within it to service its existing resident population let alone the much broader national requirements as a service centre to the Nation.
- All of these issues must be confronted now in the planning and development of the Metropolis of Melbourne as fundamental building blocks for Australia – of which Victoria as created by the Colonial office plays a centrifugal amalgamating generating factor in the national economy,
- To not grasp the essence of these facts is to fail to comprehend the essence of Port Phillip and the Metropolis of Melbourne growing around it in the future development of the national economy of Australia – situated as it is within the massive system of a global change being generated in the Asian Quadrant – our part of the world.
- Indeed recognition of these issues in the Melbourne context is essential to the sustainability of Australia – and therefore must be confronted on a reality check in a planning system for a Metropolis with a socio economic reach far beyond its so called State boundary.

The Context

It is only against this background that the present form and socio-economic and cultural cohesion of greater Melbourne, the cities around the Port Phillip Bay and the city system of Victoria make sense. This establishes the locations of the material and goods based industry of Melbourne and as such has been and remains a primary aspect of its economic viability. This is what created the city and it is a major component of what now drives it.

Plan Melbourne

There is little in PlanMelbourne that indicates any understanding of the role of Melbourne over the past 150 years or of its current role as a major primary element in the socio-economic and interdependent systems of SE Australia. Indeed the document is cast as if Melbourne operated almost without reference to its critically important role in the nation as a whole and in particular the whole of the SE of the continent. This failure is demonstrated through the clear lack of any strategy to deal with Melbourne's current role as the major logistics and supply chain hub in continental Australia.

Arising from this, PlanMelbourne does not confront the on-going management and development of Melbourne's current role in Continental Australia. It presents no clear vision for the logistics and supply chain industry. That is, it fails to confront the difficulties presented by the present urban situation and it fails to provide any realistic propositions for improving efficiency or performance in the future.

The further implication is that PlanMelbourne fails to recognise - far less grasp – the future challenges and opportunities. Just as Melbourne has been the logistics hub for much of the agricultural produce of the past it currently sits astride Australia's principle opportunity for a greatly expanded food production system serving the burgeoning and progressively more affluent communities of SE Asia, and beyond. Significant elements of such development (just as in the past) will be located outside the State of Victoria but much of it and much of the processing and value adding can be expected in Melbourne.

Action Required

1. Recognise and support the central role that Melbourne currently plays as the logistics and supply chain hub for SE Australia.
2. Initiate a major infrastructure project to establish the future of the logistics and supply chain industry in a form that does not impose on other transport and infrastructure forms. This may be expected to require the creation of a dedicate non-surface primary rail freight system connecting all the components of a developing logistics and supply chain industry (ports, inland ports, storage facilities, manufacturing hubs, the national rail interchange, etc.)
3. Establish a development strategy, and commit to the corresponding infrastructural requirements, for the advancement and enlargement of the fresh produce industry within SE Australia identifying Melbourne as its hub and as a principal centre for adding value.

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10 December 2013

Section 2

WITH PARTICULAR REFERENCE TO POPULATION AND CONNECTIVITY

- Melbourne's population has already increased to the point where it struggles to meet the need for most essential services – housing, transport, health and education. The population is growing faster than official records and projections suggest. Net migration and natural growth are increasingly out-stripping projections. The growth is being fuelled by a range of factors that lag behind normal population growth records because they do not fit the normal general categories. These include:
 - Ongoing visa categories that can be issued for up to two years. High levels of these visas are constantly churning over and the numbers are growing over time.
 - Australian citizens who have been absent from Australia for long periods and who are returning permanently, mainly due to adverse economic circumstances in other parts of the world.
 - extensive grant of business migration visas and concomitant flexible tourist visas
 - return to Victoria and, in particular, Melbourne of workers who are no longer required for the mining development boom
 - a higher proportion of immigrants choosing Melbourne over other locations
 - immigration approvals higher than the quotas allowed.
- Over time it can be expected that Australia will come under increasing pressure to take more migrants as world population pressures grow.
- It is therefore likely that the population projections used for Plan Melbourne will be understated.
- Even if the population projections are accurate, PlanMelbourne has made no clear connection between population and service/ infrastructure requirements. Nowhere is this more so than in the transport area. The plan makes provision for a quite small grab bag of projects, most of which will not be provided, by its own definition, in the short term. The main major project, the East/West Tunnel, is not going to be operational until well into the medium term. This project will consume the lion's share of available State capital funds for some considerable time and preclude any significant work on other major projects until almost the long term.
- Even the pre-commitment and pre-contract planning for most transport projects, particularly public transport projects, is only scheduled to occur in the medium term.

- It is acknowledged that road and public transport throughout most parts of Melbourne is already stretched to the limit. There is a general view by most people that road transport is already very heavy at most times on most road systems and that, in peak hour, road and public transport is not satisfactory and is costing the community through growing inefficiencies.
- Plan Melbourne places most of its emphasis on one major project, the East/West Tunnel (Hoddle Street to CityLink) which will not be operational for another six years. This, however, is only Phase 1 (\$6 to 8 B) of the East-West Link project that also involves Phase 2 (\$12B) linking CityLink to the docks and then out through the Western Suburbs and their logistics facilities to the Western By-pass. The Plan also states that most road planning should be centred on freeway development and road connectivity.
- The Plan states that there is a need to “increase reliance on public transport.” However, it provides no real proposals for significant work in the short term and little more than studies and trials in the medium term. Currently the public transport system is already overstretched due to significant annual increases in usage over recent years without any corresponding increases in capacity or commitment of additional capital resources. The Plan is clearly predicated on the pre-eminence of roads in the medium to long term.
- Most importantly there are neither real proposals nor solutions to what is becoming a crisis in the lack of transport provision in the Western arc of Melbourne. This area is the fastest growing area of the city and growth is constantly outpacing projections. It is also the predominant engine room of the material based economy of the region, having been the logistics hub for Melbourne, Victoria and its four-state S-E Australia hinterland for a hundred and fifty years. The constant call for a new East/West crossing of the Yarra River is being ignored as the Westgate Bridge nears permanent gridlock. The East/West Tunnel will not alleviate any of the West’s problems and could even exacerbate them. Even worse it ignores and in so doing negates their strategic economic importance and further development potential for S-E Australia.
- Port planning will still centre on the Port of Melbourne under the Plan for the next 15 to 20 years and there will be ever increasing inefficiencies and social dislocation without the provision of major infrastructure. This is particularly so with the Plans’ proposal to investigate a Western Interstate Freight Terminal. The plan proposes that the Port of Melbourne will be phased out and replaced by the Port of Hastings. The road connection for the Port of Hastings in the future will be via Eastlink, Eastern Freeway and a new connection to the inner ring road from Bulleen to Greensborough. This whole proposal would be inefficient and cumbersome and remove much of the natural advantage that Melbourne has as the pre-eminent freight hub for Australia. Equally important the transport strategy within PlanMelbourne increases future dependence on fossil fuels while thwarting the development of alternatives.
- Many of the ideas for study are proposing that they investigate private sector involvement in any developments. This merely adds to the uncertainty and potentially the timelines for achieving the vague objectives which are proposed. Effectively this approach limits the options to those projects that would be profitable to an investor (on a user-pays basis). As such is it much less than an optimal economic outcome (within which it might reasonably be expected that the beneficiaries would pay.)

SUMMARY:

Combined with understated population projections, the Plan Melbourne strategy will do little to provide for Melbourne's future growth and liveability. It may well be counter-productive both in its operation and by starving other approaches of funding far into the future. There is little in the document that would suggest long term planning for connectivity. Reliance on freeway road networks which are largely undefined and the lack of any substantial proposals for the short to medium term implementation of public transport projects will ensure that Melbourne will decline as an economically sustainable entity.

Section 3

Peri-Urban and Urban Food Production

The Environment and Water section of PlanMelbourne includes under Direction 5.3 the proposition to: Enhance the food production capability of Melbourne and its surrounds. It follows that under Solutions with the declaration that it will: Protect high-quality land in Melbourne's non-urban areas for food production and assess and protect strategically significant agricultural land through the development of appropriate planning provisions. All this is to be commended but it is not at all clear what mechanisms could or would be used to achieve these desirable results. Any such mechanism is likely to be contentious.

The reality is that agriculture is normally the residual use to which land is assigned if no more profitable use is available. Typically peri-urban land is more highly valued for recreational and uses other than food production - including horses and hobby activities for urban dwellers. Preferentially to assign peri-urban land to agriculture is therefore likely to require some significant intervention in the financial or legal framework. To identify this difficulty is not to argue against such action because there are likely to be major strategic issues of food security that should override local or short-term commercial considerations.

In identifying the often unrealised potential of peri-urban land for food production PlanMelbourne ignores the productive potential of urban land. Much of the total area of greater Melbourne is public and private land on which there is no construction. It is in the form of parks and reserves and, of course, private gardens. The metropolitan area is also extraordinarily well served by a very fine grain water reticulation system and produces in its wastes a great source of fertiliser. Alongside this physical situation of land, water and nutrients there is a distributed population that is already committed to the husbandry of this resource. It is called gardening. Described in this way the food producing potential of existing urban areas is immense.

From the production of fruit and vegetables there is also the production of waste material. In the wider ecological system this material is the food supply for an array of animals - and so it should be in urban and peri-urban areas. This aspect of urban productivity, however, requires careful but constructive regulation. The basic assumption should be that it is permissible to keep animals but that that must be done in a way that is compatible with the overall well-being of the area and broader community expectations of amenity and rights. There is a need to review the current regulatory frameworks and then develop appropriate regulations for a more productive future.

The challenge for governments and for the wider community is to mobilise this potential. The first thing to be done is to recognise that that potential exists, to provide detailed explanation of what could be achieved and to make

available the detailed information that would allow the wider population to embrace the idea. Essentially it is a community leadership challenge.

Alongside the projection of the vision there is a need to facilitate and encourage micro-marketing and exchange. The product coming out of gardens never matches exactly the consumption requirements of any one household. There are inevitably gluts and shortages that require some exchange facility to share the produce. This may be in the form of a simple commercial or barter arrangement or supported by a local trading system that might also encompass other goods and services (see Local Exchange Trading Schemes [LETS]).

There are already many urban food-producing initiatives. Many gardens are already used for the production of fruit and vegetables – and very productive they are. Community gardens are in high demand and make a relevant, if modest, contribution to the urban food supply. For the private gardens and gardeners and the community gardens and gardeners their great longer term potential is to act as centres of leadership, education and assistance for the wider community.

Producing more fresh food directly within the urban area would, of course have commercial implications for the present suppliers; it would reduce their local market. Elsewhere in PlanMelbourne there is a commendable commitment to producing fresh food for marketing into Asia. These two ideas are complementary. Increasing local urban food production releases productive agricultural capacity to address international markets. This can be to everyone's advantage. It does, however, require facilitation by governments through community education and leadership supported by an appropriate regulatory framework.

Increasing the productive capacity of urban and peri-urban land is likely to be very important in the overall sustainability and resilience of urban areas. By locating production much closer to consumption and closing the nutrition loops it offers substantial potential to reduce the environmental impact per capita of urban dwelling while also greatly improving security.

Addendum

Having argued for local production of food within the urban area it is appropriate to recognise that the principle of bringing production and consumption more closely together can and should be applied to many other aspects of urban life styles. For much of recent history planning systems have sought to separate urban uses through the use of zoning. This has also created the traffic congestion, resource depletion, pollution, environmental degradation and massive loss of human time that we currently experience. Much, but of course not all, of our current production of goods and services can now be carried out in ways that entirely compatible with other urban land uses such as housing. Making Melbourne more productive by mobilising local resources of space and information technologies has vast

economic, social and environmental potential. Again, the challenge is to reformulate the regulatory framework to encourage such a transformation.

(A clear example of the potential is the recent development of affordable 3D printing. This off-the-shelf technology can now fabricate objects in many materials and do so in a domestic or back-yard environment. The pattern is clear. The new information technology is facilitating a vast array of new goods and services that can operate locally.)

Section 4

Biodiversity: Eco-system Corridors and Nodes

This submission is particularly directed to the section on Environment and Water as set out on pages 117 to 131. On reviewing Direction 5.1 to 5.8 and their various initiatives almost everything that is set out is highly commendable. There is, however, another aspect of environment and the sustainability of the environment that is critically important and almost entirely missing from the PlanMelbourne document. It is this missing link that is the subject of this submission. Thus, this submission is offered as a way of enhancing the original set of proposals.

The missing link is literally the omission of linkage as a key element of the environmental scenario as depicted in the document. Healthy environments are, of necessity, constituent parts of a healthy ecosystem. And eco-systems, by their very nature, require geographic continuity. A viable environment strategy must therefore support a continuous web of life. PlanMelbourne recognises this in relation to the waterways and their immediate riparian strips. Of course this is to be commended, but, in itself this is also an inadequate environmental strategy. A much more extensive system of connectedness is required. The good news is that this can readily be achieved.

Over the past two years various papers and presentation have been developed to elaborate this proposition and demonstrate what might be achieved. These are provided as attachments.

The opportunities are extensive, the potential benefits are substantial and the costs are virtually zero. The urban landscape that forms the urban forest is always in a constant state of development and redevelopment. There are corresponding budget allocations throughout the governmental system and within the private sector. The challenge for the State Government is to harness this activity to the creation of the ecosystem corridors and nodes that would repair and strengthen the ecosystem throughout the urban areas and connect with similar patterns in surrounding areas.

To achieve this very important outcome requires little more than establishing the vision throughout the community.

Attachments

Three papers were created in sequence. Also in order they present the idea at three different scales starting at that of the local municipality (The City of Melbourne) through some ideas that might be applied to a group of municipalities such as the Western Suburbs of Melbourne) to a national system of trans-continental ecosystem corridors.

Attachment 1**City of Melbourne Urban Forest Strategy - Submission AR**

This paper was developed in response to the invitation of the City of Melbourne to comment on their draft Urban Forest Strategy, 2012.

Attachment 2**Draft Urban Forest Strategy - Western Suburbs**

A document developed after discussions with those developing the Greening the West project for City West Water, 2012.

Attachment 3**From Urban Forest to Trans-Continental Eco-System Corridors**

This is the text of an invited paper presented at the ICLEI Thriving Neighbourhoods Conference, Melbourne, 2012.

Attachment 1

City of Melbourne Urban Forest Strategy Making a Great City Greener 2012 -1232 Consultation Draft – November 2011

A Submission to the Consultation Process Allan Rodger February 2012

The opportunity to comment on this draft strategy is welcome. In the past I have brought issues that impinge on the Melbourne City urban forest to the attention of officers of the City Council and to Councillors. It is appropriate, therefore, that I reiterate and in some instances upgrade these views in this more structured context.

Having reviewed the document I am very impressed. I certainly do not disagree with it as a good basis for a continuing process of investigation and action. Its claim that it will:

guide the transition of our landscape to a future forest that is diverse, resilient and responsive to the varied needs of the community and of the city.

create resilient landscapes, community health and wellbeing and a liveable, sustainable city.

become a city within a forest rather than a forest within a city.

is both plausible and highly commendable. There is every reason to expect that it should lead to fulfilment of the declared vision:

The City of Melbourne’s urban forest will be resilient, healthy and diverse and will contribute to the health and wellbeing of our community and to the creation of a liveable city.

I do, however, have two important reservations. Firstly the proposition as presented is inherently conservative. If identifying this as a criticism seems contrary to conventional environmental expectations it is a criticism of those self-same environmental expectations. Conservation of the status quo can be good but not if the status quo is not sustainable or worse: counterproductive to the well being of the systems of the natural environment.

There is the problem. The urban forest that we have inherited is not necessarily sustainable and it is certainly not necessarily in the best interest of the systems of the natural environment. It is a construct created within a conceptual framework far different from that to which we would now aspire. There is, therefore, no reason to expect that the present situation is even sustainable far less ideal.

The title of the strategy amply demonstrates this point. “Making a great city greener” implies that more vegetation in the city would of itself make the city and its urban forest more sustainable. This is clearly untrue. The key issue is,

therefore, not whether to make the city greener but how best to achieve a biologically sustainable outcome. This is quite a different question and it is the question that is the central subject of this contribution. Sustainability is the overarching challenge. Everything else is subservient to that. If, instead of "sustainability", we used the term 'survival', all would be clear. For who would argue against survival? This is the paramount requirement for remaining as a participant in the evolutionary process.

The strategy aims directly at serving current human expectations and personal fulfilment. Again, all of that is entirely legitimate and indeed commendable. It is also politically necessary as it is the community of Melbourne and those who 'use' the City of Melbourne that will have to be recruited to support the strategy both financially and operationally. A highly liveable city is unquestionably desirable and, for political reasons, it is necessarily an integral part of a sustainable city. But these two ideas – liveability and sustainability - are not synonymous. The sustainable city to which we should aspire is also answerable to the wider constituency of the natural environment. And while that wider constituency does not vote it does have the capacity to operate sanctions. How, then, can the urban forest strategy accommodate all the relevant considerations?

To answer this we have to reflect on how we humans interact with the natural systems of the environment. How do we operate within, and in harmony with, the eco-system? Traditionally we have merely shaped the local environment to our purposes. This is clearly reflected in the present urban forest of Melbourne. Our forebears went to considerable trouble and, no doubt, considerable expense to remove the local vegetation and animals and to import and establish non-indigenous species. Indeed they were actively doing this in Royal Park as recently as the mid-70's. They adopted this approach so as to create local environments to suit their purposes and their cultural expectations. These purposes were commercial such as cattle, sheep, camels, goats, etc. It was a cultural motivation that brought in rabbits and foxes and it was aesthetic considerations that introduced so many of the non-indigenous plants such as the water-borne hyacinth, lantana and, for the cities, elm trees, oaks and London Planes. So strong was this motivation that acclimatisation societies were established throughout Australia and in many other countries with the specific purpose of introducing non-indigenous species of all kinds.

We are now living with the consequences of that perspective on the relationship between humans and the wider environment. It is salutary to remember that the pre-existing environment did not actually stop any of these intrusions happening but it is also clear that the environment was not passive in the face of these intrusions. It responded quite decisively. This became manifest in innumerable ways from soil degradation and loss through changing water tables and salinity to massive loss of species and biodiversity.

However, the damage has gone much further. The architecture of the ecosystem has been radically disrupted. If this is an unfamiliar way of describing what has happened think, rather, of how the physical shape of the

environment has been changed and in particular how the physical relationships between the various interdependent and interactive components of the natural environment have been broken. Continuity has been seriously compromised. With that loss of the continuity of the environment, so, too, has biological and genetic material been stopped from flowing. Locally there has been massive disruption either through the introduction of non-indigenous species or the removal of important elements of the pre-existing ecosystem. At the larger scale, physical disruptions have led to fragmentation and breaking up of the ecosystem. It is important to recognise that ecosystems are not delineated by land tenure or land ownership boundaries - though many past and current interventions have been on the basis of a land ownership.

This process is being exacerbated by the changing climate. These deleterious effects are now expected to become much worse for two reasons. Firstly rising temperatures would normally, and in the broad, cause species to migrate towards the north and south poles but the physical barriers that we humans have created break up the continuity of the eco-system. In many cases will impede or even prohibit this essential flow. The other effect is that rising temperature would cause species to move to higher ground. Even where this is still possible this movement tends, of itself, to lead to break up of continuity and the creation of islands of occupation separated by inhospitable surrounding areas. Thus the projected climate change will exacerbate the damage already done to the continuity and integrity of the ecosystem.

Fortunately alternatives to this destructive and divisive way of operating are emerging that have far reaching potential and impinge directly on how we should be planning for the future of the urban forest. Indeed the last of the objectives of the strategy: that Melbourne should become 'a city within a forest rather than a forest within a city' provides a valuable insight to how we could achieve our own sustainability by establishing sustainable relationships with the environment. Ecological realities make it clear that our sustainability and corresponding well-being are intimately dependent upon the sustainability and well being of the wider environment. Sustainability is inherently not divisible. Everything that is not sustainable undermines the sustainability of everything else. This insight can be a valuable guiding principle for shaping the future of the human enterprise.

Once we acknowledge that the integrity, and with that the physical continuity of the natural environment, is in our own best interests it becomes clear that we need a corresponding geometry for us and our activities that allows this eco-systems approach to be achieved. How can we provide for the continuity of the natural systems of the environment while also having appropriate spaces for ourselves and our physical support systems?

The texture and pattern of a sponge provides an appropriate geometrical analogy for conceptualising such a scenario. The fabric of the sponge is continuous yet it provides volumes that are not sponge but are available for other organisms. At a larger scale this provides a useful template for us and for how we organise our space to support ourselves, and, the ecosystem on

which we are ultimately dependent. At the largest scale can we organise our rural areas that provide us with the resources that we need for our very survival while also restoring the continuity of the natural systems? At the smaller scale of the settlement and city can we contrive to reconnect the elements of the environment and provide the biological continuity that is so important to ecological health? The answer, of course, is YES. Yes we can once we recognise that this is what is required for us, for the environment and for our own well-being. We, and the natural systems of the biological environment, can, to our mutual benefit, align our objectives. A suitable urban forest strategy provides the opportunity to confront this challenge.

What is required is that the whole area of human intervention be re-conceptualised as a system of biological nodes and corridors. This should seamlessly operate across the whole area of human intervention. The non-urban system should therefore interface seamlessly with the urban system and this should progress throughout the urban area. It is a new and sustainable geography or eco-system architecture extending from the continental to the local.

Now, how is this to be achieved within existing urban areas and more widely? Well, the first imperative is to adopt and project this conceptual framework. This is not a local strategy; it is a proposition for an urban forest strategy that is an integral component of a societal, whole-of-society, sustainability strategy. Such a strategy needs leadership. It also needs to be almost universally adopted as the appropriate way forward though that does not have to be done all at one time. Melbourne City Council is, of necessity, the leader that is needed within the State of Victoria and perhaps more widely. It is also the organisation with the most to gain from demonstrating leadership at this, the highest level in the challenge to create sustainable futures.

While that amounts to a generalisation of the overall approach there are also questions about who does what and how overall responsibilities are identified, assigned and then managed. Especially within urban areas there is a clear distinction between the capacity to plan the form and performance of spaces that are under different kinds of ownership. Over the next several decades there will be many opportunities to strengthen or extend existing nodes or thicken existing corridors. Many of the existing “forests” will require renewal as the current trees, shrubs and other plants reach the end of their effective life.

Generally, a local authority can determine, or at least have a significant influence over, the public land that it owns or manages within its own boundaries. It will have less influence over the use of public land that is under the control of other public sector authorities or corporations. Except under its planning powers when responding to proposals for change local governments will have no direct control over the use of land in private ownership. They do of course have the power to apply rates and levies which could be directed selectively to influence private land-owners on how the use and manage their land.

There is, however, a clear distinction between the opportunities available on public and private land. Fortunately this accords well with the spatial requirements of the eco-system approach already outlined. It is the public sector that controls the great linear corridors within our urban areas: the streets, boulevards, water courses and flood areas, rail tracks and service reservations. They also control the parks. When we put these two together we have the potential for a coherent and progressively continuous network of ecosystem corridors and nodes. This is exactly what is needed as the framework for restoring and reconnecting the natural local eco-system.

If this is achieved within the public domain then requirements of the private sector land can be more diverse and less restrictive. This is not to argue that further ecosystem contributions from private proprietors would not be welcome; rather it is to argue that the systems as a whole would not be dependent upon such contributions. One important constraint would be that the private sector should not foster land uses and social practices that would undermine the natural indigenous ecosystem network generated within the public domain: a do-no-damage constraint.

Across both private and public land the ecological expectation should be to optimise the level of productivity. Producing food or shade or firewood, for example, is environmentally beneficial and should be encouraged. So, too, is providing for the flow of genetic material along biosystem corridor. One group of activities is clearly likely to be the preferred output of the private sector while establishing and maintaining indigenous ecosystem continuity and integrity clearly falls to the public sector and in particular local government. All are healthy products contributing to the overall viability of the system. All are to be encouraged.

Current practices of the City of Melbourne

To take a leadership role in advancing a comprehensive ecologically relevant urban forest strategy it is essential that the City of Melbourne itself establish practices that fully support the overall goal. The most obvious situation is what the City does about its existing trees and in particular how it replants. Current practices may or may not accord with these expectations. Recent examples may serve to illustrate how, with the best of intentions, mis-steps can be taken.

Example 1

Over recent years the original paper barks in the pavement were removed (because of the damage that their root systems were doing to adjoining buildings). New trees were installed within the car-parking zone. These proved unsatisfactory because of the high ground water level in that area. Before the present trees were planted there was an extensive process of consultation and various options were presented. Opinions were canvassed from everyone in the adjoining area but no strategic vision was presented. The outcome was presumably largely based on

aesthetics and oak trees were selected on the basis of a popular vote. The consultation process was commendable but the outcome, in the absence of vision and leadership, was not. The oaks are thriving but they will contribute to the overall ecological well being of the area or the metropolis. Similarly, oaks have been planted in the central reservation of Canning Street to replace the original elms. In marked contrast the central reservation in Pitt Street was planted with eucalypts. They have established themselves very quickly and are now alive with local birds.

Example 2

The City has a practice of lifting and re-laying blue stone sets along the side of roads and in the many laneways. The sets are dug up and set aside. The space is then excavated down a further 80 to 100 mms. A concrete base is then installed and the sets are re-laid and grouted. But, of course they are not re-laid with the same surfaces pointing up or in exactly the same positions as before. The result is that all the wear marks that carry the information of the past – the cultural heritage - is lost. What results is a system that merely looks old but no longer tells its story. Where are the worn tracks of the steel wheeled night soil lorries? Gone in a jumble of blue stones. The other effect of this process is that the root systems of any nearby trees that lay immediately below the blue stones and that were fed by the water filtering down through the joints have been destroyed. In addition that area now drains more quickly. All infiltration has ceased and the capacity of the area to contribute to a healthy urban forest has been reduced.

If we take the broad ecologically relevant urban forest as the overarching conceptual framework it can then be argued that:

the City of Melbourne, through its Urban Forest Strategy should:

1. Set out to establish an ecosystem-wide approach - a continuous system of eco-system corridors and nodes - as the overarching framework within which it and other local governments, within the metropolitan area and more widely, operate.
2. Within its own area of responsibility adopt an eco-system corridor and node approach as its own land use and urban forest strategy.
3. Ensure that all its operational construction and reconstruction activities are consistent with the declared urban forest strategy.
4. Recognise that the appropriate planting regime for these corridors and nodes would ensure that the flora and fauna indigenous to the area are sufficiently dominant to secure the functional integrity of the indigenous bio-system as a whole. (eg This can be achieved by small plantings along a street or a larger project in a Council owned Reserve.)

5. Acknowledge that there may be a few situations where overarching cultural considerations suggest that iconic non-indigenous species and eco-system environments be maintained (The Botanic Gardens is an obvious example and perhaps Royal Parade and a few other sites).
6. Accept responsibility to provide appropriate supplementary life-supporting feeding, breeding and nesting environments for indigenous species (invertebrates, animals and plants) that would not normally be acceptable within an urban forest. For example, safety considerations may preclude the retention of very old hollow trees that are likely to collapse or lose limbs. That being the case it is necessary to provide the required facilities.

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Urban Forest Strategy The Western Suburbs of Melbourne

The Background and Challenges

The general principle guiding the ongoing management and development of urban forests should be to repair the overall fabric of the local flora and fauna ecosystem through an integrated system of corridors and nodes. The expectation is to give preference to plants and particularly trees and shrubs that are indigenous to the area. In any particular situation, however, there may be good reasons for constructing a new local ecosystem regime that properly reflects current conditions. In many cases the current eco-system reality within urban areas is far different from that in which the indigenous ecosystem evolved. A broader, more encompassing strategy becomes appropriate.

The Western Suburbs of Melbourne provide a good example. Originally this was a rather harsh exposed area with thin soils over a succession of basalt lava flows from the many monogenetic volcanoes in the Western District of Victoria. The ecological result was an extensive grassland that was immediately recognised and exploited for grazing by early European settlers. Draining this great plane there are several creeks and river systems flowing southwards into Port Phillip Bay. In some places they cut deep gorges into the basaltic plain.

The course of the Yarra River marks the eastern boundary of the basaltic plain. The main water courses to the west of this great geological divide are the Darebin Creek, Merri Creek, the Moonee Ponds Creek, the Maribyrnong River, Kororoit Creek, Skeleton Creek and the Werribee River. Each of these for at least part of their course is fringed by substantial forest trees, shrubs and other undergrowth. It is the area to the west of Moonee Ponds Creek that is typically recognised as the Western Suburbs. Though much of the area now occupied by the Western Suburbs was grassland it was suffused with rich ecosystem corridors dominated by much larger plants.

Now, on this same area of land to the north and west of the Central Business District of Melbourne there is a large resident population and very large

industrial premises lying. The resident population of this area is about a million.

The Western Suburbs have provided the main base of Australian manufacturing industry. They remain the home of much manufacturing including the motor industry. Progressively more dominant, however, has been the growth of the Western Suburbs of Melbourne as the logistics hub (airports and the Port of Melbourne connected by rail and road) for much of Australia. It serves Victoria, Tasmania and substantial areas of South Australia and New South Wales. This industry has been growing for many years and is expected to continue growing at a significant rate for decades to come. This anticipated growth is both in volume of goods handled and in outreach as the Melbourne hub grows in significance in relation to the rest of the country.

With the growth and development of the Western Suburbs much of the original flora has been removed. Now there remains only a small proportion of the original native grassland and correspondingly only very limited habitat suitable for the locally indigenous fauna. There is also a large amount of disruption to the system as a whole as the original vegetation where it survives is often in isolated patches. The river systems too have been greatly modified. Indeed for a century or more they were treated as convenient means of disposing of industrial effluent and wastes; they were little better than industrial sewers. Over recent years, however, there has been a massive effort to clean up the waterways, discontinue their use as waste disposal systems and revegetate the banks and floodplains.

Replacing much of the original ground cover there is now a massive amount of urban development that radically changes the environmental and ecological performance. Buildings and roads have sealed off much of the surface therefore are the cause of lower rates of infiltration and increased rates of run-off. With the buildings and roads has come an overlay of additional energy deriving from external sources. Together with changes in the reflectivity (albedo) there has emerged a significant urban heat island effect. Recent research shows that this is important for the Western Suburbs and all those who live and work there but it is also a contributing factor to the heat island effect over the whole of Greater Melbourne.

Alongside these physical and biological changes there is also a developing community awareness coupled with growing aspirations for a more congenial living and working environment. One manifestation of this is to be seen in the proposition to "Green the West." There is a feeling that the rather bald and exposed urban landscape could, and indeed should, be made more supportive and more attractive for the population by the creation of an extensive tree cover - a new urban forest.

This growing vision is in part because of the marked difference between the general ambience of the relatively affluent Eastern Suburbs where there is extensive tree cover supported, as it happens, by significantly higher rainfall and deep fertile soils. Could the Western Suburbs sitting as they do on their underlying basaltic plain, with shallow soils and lower rainfall be like that and

feel like that? It would be an outcome that would be very much appreciated. It would also have a transformative effect on the social and economic future of the whole metropolitan region.

If that is an aesthetic and cultural aspiration there are also very practical physical reasons for aspiring to such a future environment. The heat island effect causes real life threatening stress particularly for older or infirm people. For everyone it reduces the quality of daily life. Increasing tree cover could reduce this. Effectively trees and all plants act as evaporative cooling devices. At the smaller scale trees can also provide shade that results in lowering the effective temperatures (a measure of thermal comfort or thermal stress combining the actual air temperature, the humidity, the rate of air flow and the mean radiant temperature.) They can provide these benefits, however only by taking water from the soil and evaporating it through their leaves resulting in an overall cooling effect. Fortunately, within the area of the Western Suburbs, there is now very much more water available and on a much more regular basis than in earlier times. The growth in population and industry has brought with it the supply of additional water drawn from outside the built-up area. While much of this water that is used by people and industry becomes polluted through various domestic, commercial and industrial uses it is, nevertheless, water. Much of this could be treated to make it suitable for growing plants. The 'waste' water from human consumption and processes could become the water supply for a new urban forest that would cool the western suburbs, offset the urban heat island effect and create a new and more attractive ambience for the whole residential and working population.

Thus for a variety of reasons Greening the West could have significant overall benefits. Yet, a heavy ubiquitous tree cover would be quite different from the 'natural' ecosystem of pre-European settlement. The reality is however that the ecological situation, the boundaries and the opportunities, are also very different from that pre-settlement time. What should now be done?

Urban Forest Development for the Western Suburbs: Building on Challenges and Opportunities

Since continuity over time and physically across the landscape is an essential element of healthy and resilient ecosystems and since there is a desire to establish a substantial tree and shrub cover for the region that was previously mostly grassland a purely preservation or restorative approach would not be appropriate. The future lies with a constructed and reconstructed ecosystem that integrates with the surrounding ecosystems and that supports the social, cultural and environmental aspirations of the communities of the Western Suburbs. Consider the following scenario.

It would be appropriate to draw on the trees and shrubs that are already indigenous to the area. These are to be found within the local waterway systems. Through these linear systems they connect ecologically with the more distant forest cover. The first step should therefore be to protect and wherever possible strengthen the riverine systems within Western Suburbs

and up-stream to their headwater sources. The natural rainfall and ground water would normally support such development though some supplementary water may be required during the establishment process.

Even within a greening approach the natural grasslands should not be abandoned. Wherever practical they should be retained. Where possible they should be reconnected into a system of corridors and nodes using the corridors currently dedicated to, or reserved for roads, rails and utilities.

In additions the indigenous grasses should be preferentially incorporated as the ground cover in other areas.

A different approach is needed in the areas that were previously grassland and are now built up. It is in these areas where the major new greening is most needed. This is where the population lives, works and plays and goes about daily living. This is where dramatic transformation is needed. The challenge is to select the trees and shrubs and other plants that complement the indigenous ecosystem infrastructure while delivering the tree canopy that would achieve the desired environmental outcomes.

A key issue is shade. Part of the environmental improvement that is desired is to provide shade from full sunshine at the hottest times of the year. There is also, however, a desire to welcome sun penetration during the colder months of the year. Only deciduous trees provide this service yet the region, and indeed Australia, has very few deciduous trees. On the other hand cities around the world are often successful in using deciduous trees that are not indigenous to their area to deliver this selective shading service. Unfortunately non-indigenous trees provide very little support for the local fauna. Some kind of balancing of these two sets of expectations is needed. One important restriction on this should apply. There should be a prohibition of all non-indigenous species that have the potential to be destructively invasive of the local ecosystem. This is merely recognition of the massive environmental degradation that Australia has already experienced as a result of importing and releasing inappropriate species.

Not everywhere requires the services of deciduous trees. Where this kind of shade is not needed preference should be given to the most locally available species starting with those species that are indigenous to the waterway corridors. There will also be a need for species that are more drought resistant than the riverine trees and also capable of safe development over the basalt underlying rock formations; deep tap rooting species could be inappropriate in some locations.

Where the shading service that can be provided by deciduous planting is desired only a few Australian species are available. Where practical they should be used but their range is very limited. Thereafter, cautious choice of non-indigenous deciduous species becomes appropriate.

Just as there is a divide between indigenous and non-indigenous species there is also a divide between land controlled by the public sector and private land. The primary obligation for repairing and continuing to support the natural

ecosystems of the area falls firmly on the public sector. Only the public sector has the capacity and the land holdings to develop the nodes and corridors necessary for a healthy fully interconnected ecosystem infrastructure. Anything that can be done on private land to enhance this system is to be welcomed.

Plant cover of all kinds on private land should be encouraged; it all contributes evapotranspiration and thus cooling. Sometimes this will be for shade. Wherever possible it should be productive in whatever way is desired and within the capacity of the land user. There is a role here for the public sector to help the private sector to maximise the productive output. This service can range from encouragement and information through to the delivery of recycled irrigation water and nutrients derived from the recycling process. This could even be in the form of nutrient rich-water.

Such a system (or set of systems) across the Western Suburbs would, of course, require access to more water and more reliable water than falls naturally in their immediate area. It would therefore be very dependent on establishing a more sophisticated and interconnected water management regime. Catching and storing surface water is an obvious first source both for the public and the private sector. Then there is a range of further possibilities including various types of water and wastewater treatments and distribution.

Summary

Within the Western Suburbs there is the opportunity to improve quite dramatically the ambience and the quality of the living environment for the resident and visiting population. Significant health and welfare benefits could be achieved through reducing the heat island effect with benefits that would extend across the metropolitan area. All this could be done while also enhancing the health and continuity of the natural ecosystem of the area. The method of doing this would provide new opportunities for the creative use of the current water resources and redirect nutrients away from entering Port Phillip Bay to highly productive uses within the Western Suburbs.

Synergy

There is a powerful potential synergy between the role of the water authority, City West Water, and the municipalities of the Western Suburbs. On the one hand City West Water is committed to delivering water services and is expected to do this in the most cost effective way while also contributing a dividend to the State of Victoria. It falls to the municipalities to deliver to the communities of the Western Suburbs a healthier and more convivial environment. To achieve this these municipalities need to reduce the heat island effect and enhance the environmental ambience of the whole area while also advancing overall economic and social well-being. For this they need water and they can use nutrients. This is precisely what City West Water is expected to do. It is a win-win situation. The municipalities can advance the overall well-being of their communities and City West Water can deliver more and more appropriate water services.

Conclusion

There is a prima facie case for the development of a substantial urban forest across the Western Suburbs of Melbourne and that this could include an effective programme of ecosystem construction and reconstruction.

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Thriving Neighbourhoods Conference **Session: Sustainable Urban Transformations**

From Urban Forest to Trans-Continental Eco-System Corridors*

This story starts with a magnificent 40-year-old gum tree in the back yard of a house in Canning Street, Carlton. It was located very close to the service laneway. When it was decided that the bluestones (cobble stones) needed to be re-set they were removed, about 250 mm of soil was then excavated, a concrete base was laid and the bluestones were put back. In this process much of the fibrous root system of the tree was removed and the concrete stopped infiltration of rainwater. Within a couple of years this great tree was dead. With its removal we lost a food source and a living habitat for our much loved rainbow lorikeets, the morning warbling of the local magpies, a perch for numerous other birds and the removal of countless smaller plant and animal organisms and microorganisms. It was a significant loss to the environmental quality of the neighbourhood and a loss to the urban forest.

A couple years later the City of Melbourne called for submissions in response to its Draft Urban Forest Strategy. It was an irresistible challenge. Far from watching the natural systems of the urban area degrade how could we establish a process that would systematically heal the ecosystem and create a healthy resilient environment of which we would all be proud to be a part?

If that is the background and the challenge let me declare where I start. Firstly, I am an inveterate designer and student of design. From engineering and then architecture I have been in the business of postulating solutions to problems. But this is more than just putting together physical arrangements in support of a set of desires. For me it has become about creating processes of interaction between people and the environment. It is an approach that sits between a problem domain and the support systems. On the one hand we need to know what is physically possible (the possible artefacts and arrangements) but this approach inevitably leads to an equivalent exploration of what is put forward as the problem.

I would also argue that everywhere and in every aspect of our aspirations is, or should be, the pervasive guiding principle of sustainability: in particular environmental sustainability on which all other aspects of sustainability rest. This is the context within which we should shape our constructed environment. It also helps us identify appropriate constraints to be applied to our interventions as they modify the wider natural systems of the biosphere.

This leads me logically to my second starting point. I see myself primarily as an applied ecologist – a human ecologist. Whatever we do in the physical world is an intervention in the ecosystem of which we are a part. It may seem unnecessary even to mention this but so often our interventions focus strongly on the physical objects and the services that they are expected to deliver to people that this critically important issue is overlooked. We can succeed spectacularly on one front and fail miserably and disastrously on the other. Let us move towards healthier communities in healthier environments.

It is from this viewpoint that I turn to the idea of an urban forest. Inevitably we must start with some consideration of the present situation. Any urban forest is, by its very nature, an ongoing growing and developing system so where we start on this process is important. It sets the basis of what we can and should do.

Ecologically, cities, and indeed much else in recent human development, have been very damaging to the pre-existing environmental systems. Firstly, through many different physical and chemical activities, they have depleted or destroyed the local biota and thus the indigenous biodiversity over substantial areas, and, they have drastically changed the various physical elements – soils and the supportive flows of water and nutrients. In many cases they seem to have destroyed it completely. The second major blow to the natural environment is that cities and human development have broken up the continuity of the natural system. From a seamless, continuously interactive ecosystem the emergence and development of the human enterprise has created a disjointed array of isolated subsystem. It may be likened to creating an archipelago: a collection of isolated island ecosystems. This is very significant because healthy ecosystems require the opportunity for the opportunistic migration of species and for the interflow of genetic material. Continuity and interaction are essential characteristics of a healthy system.

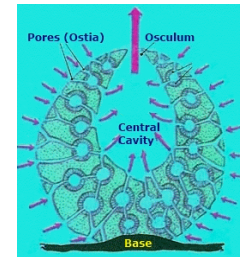
The defining message from this observation is that we are starting with a degraded and disjointed ecosystem. It is degraded in the sense that almost everywhere we look there has been a loss of species and thus a loss of biodiversity. Further the web of life – the continuity of the ecosystem - has been seriously broken up. On both counts the system has suffered a loss of resilience. Almost all of this is attributable to human activities and development.

This cannot, of course, be resolved by removing human interventions, or settlements or, indeed, humans themselves. The challenge is to formulate ways in which healthy human enterprise can live successfully within a healthy ecosystem. This cannot be achieved by reconstruction of the

ecosystem that has gone. Our very existence has changed the parameters. The goal must be a new synthesis of humans within the environment.

The pattern of a sponge may serve as a metaphor. It has a continuous fabric that encloses a vast number of holes and passageways. Both have continuity.

Let us think about the structure of a sponge. A sponge consists of a continuous fibrous structure that forms a very large number of holes and passageways.



When humans started modifying the environment only isolated areas of the landscape were affected. The sustainability, the integrity of the system as a whole was not threatened by these minor intrusions. From there, however, over the millennia and especially over recent centuries there has been an accelerating progression of human development and intervention that has now resulted in a radical transformation. Such is the scale of this change that humans and the natural systems of the environment have swapped places. They still retain a sponge-like relationship. But, whereas humans started as occupants of small holes in sponge-like natural ecosystem structure these holes have gradually expanded and connected up so that they have taken on the geometry of the fabric of the sponge. The natural ecosystem is now consigned to the holes. It has become a set of left-over remnants of its former self.

Cast in this way, it seems that the natural systems are broken and broken in two ways. There has been a loss of species and local and global biodiversity that is thought to be gathering pace. And physically or geographically, it has been broken by being broken up. It has already lost that continuity that is such an important characteristic of a healthy resilient ecosystem.

Now, what do you do when something important for our very survival is broken? You fix it. Herein lies the guiding principle for the ongoing development and redevelopment of the ecosystem. That process can begin with what we may describe as the urban forest.

Whether we recognise it or not our urban areas contain plants including shrubs and trees that together constitute our urban forest. That is where we start. Of course the motivation for the creating the present situation was not to repair the local bio-systems; frequently it was precisely the opposite. Australia has a long tradition of replacing indigenous vegetation with European and North American species. The past has often been specifically about destruction of the local flora and with it much of the local fauna. We now have the opportunity, or more realistically the imperative, to turn that around. The challenge is to invent an urban ecosystem – including the urban forest – that, on the one hand, supports our human enterprise and, on the other, repairs the natural bio-systems with rich indigenous biodiversity and continuity. Translated into the language of architecture or planning or

urban geography this means developing a system of interconnected bio-system corridors and nodes.

We can start with waterways, major road and railway corridors and linear utility reserves as the currently existing connecting systems of the urban fabric while the parks, existing nature reserves and flood-plains serve as the nodes. If that would provide a primary sponge-like structure it can be supplemented at a smaller scale by planting along lesser streets, cycle tracks and pedestrian ways.

But as we have seen much of this has already been planted and managed in such a way as to replace the local with the foreign. What is now needed is not, of course, a wholesale process of replanting across the whole of the urban landscape. That is neither possible nor desirable. What is required is a long-term commitment to focus much of our future maintenance, re-planting and development of the urban forest on systematic transformation to indigenous and bio-diverse plants. And with these plants will come the indigenous fauna from the tiniest microbes to the birds and animals. We need the vision and we need to think in terms of bio-system regeneration. In the dynamic evolving situation in which we now operate we need to take every opportunity that arises to expedite the transformation process.

Lest this seems simple to the point of naivety we also have to recognise other expectations. The list of indigenous trees for the whole of Australia includes very few that are deciduous. Yet, we know that shade is important in the harsh Australian heat and that for much of the country winter sun is also highly desired. Deciduous shade trees therefore do a valuable job of protecting us and our buildings and motor vehicles from the excesses of summer solar radiation and giving us access to the warmth of the sun when we most want it.

There should be one major constraint on using non-indigenous plants. We should not tolerate the introduction or retention of plants, or indeed animals, that are toxic to the environment in the sense that they actively destroy the natural systems around them. Australia has a long history of getting this wrong - from the cat, dog, rabbit and cane toad to the blackberry bush, prickly pear and lantana - and the whole continent has suffered accordingly.

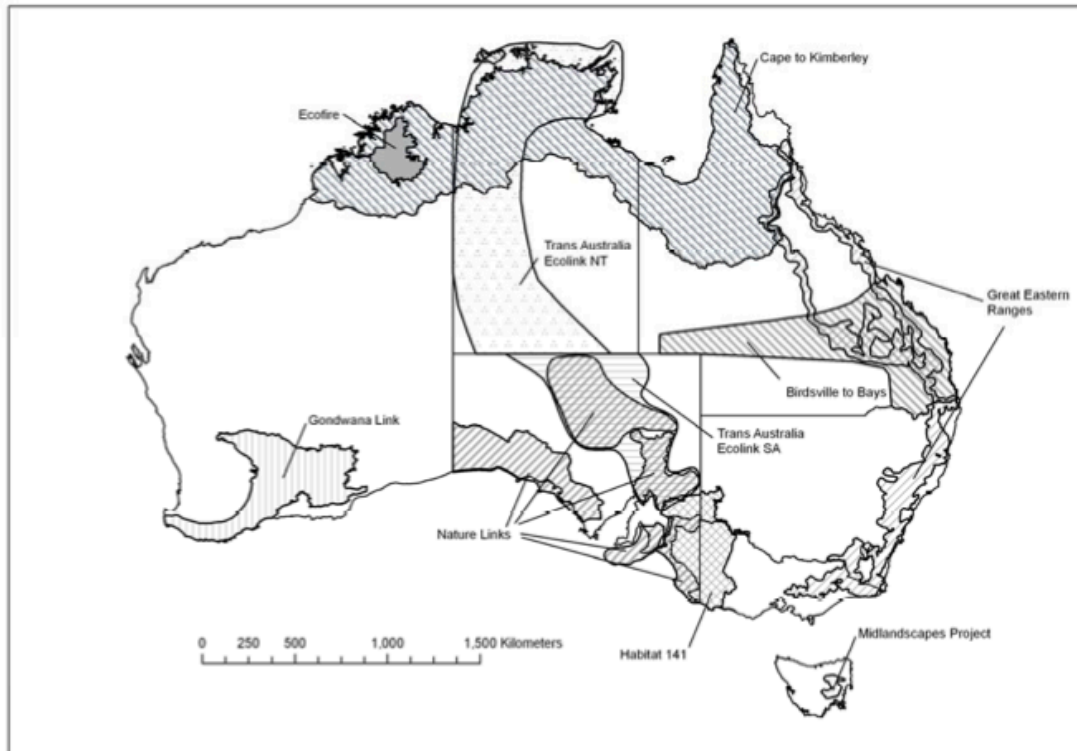
The clear message is that we should not be doctrinaire. We should not be trying to recreate an undisturbed natural environment as if humans were not there. Rather we should be seeking a future ecological system in which the human enterprise is an integral fully interactive part of a healthy system. Humans by their very presence have modified some of the major operating systems of the ecosystem within urban areas - and, for that matter, everywhere else. Typically there is very much more water in urban areas than the natural rainfall. Humans also import nutrition for themselves and their animals. They then produce wastes that are, or can be, available to support the local bio-system.

If this, then sets the scene there are several interesting implications. Could such a vision be achieved through some prescriptive directive: almost

certainly not. Could it be achieved by some local community or municipality: almost certainly it could – indeed - almost certainly it has been. But how to translate local initiative into something more pervasive? And here the politics of the situation may become interesting and supportive. Any group pursuing a sustainable urban forest strategy based on nodes and corridors predominantly using indigenous flora will find that its own success is limited unless it can persuade neighbouring communities or municipalities to adopt the same overall vision. Together they would find advantage in co-ordinating and connecting their two systems of corridors and nodes. And, of course together they would have a more persuasive case and more to offer their neighbours than if operating alone. There is a synergy emerging in the system. [The experience of local governments in establishing their own cycle ways has had this effect. They become much more useful if the neighbours also have a similar interlinking system: and so on.]

A similar situation arises at the edge of the urban area. The adjoining peri-urban areas would look quite different from outer suburbia but they have the same set of opportunities and could adopt the same overall pattern of land use and planting by connecting up remaining areas of indigenous planting while leaving other areas for agriculture, horticulture and semi-rural lifestyles and recreation.

The same advantages of interconnection continue even as the scale increases. Eventually we can envisage major eco-corridors connecting up from rural areas to coastal areas and the oceans. Both the Trust for Nature (privately held land places under conservation covenants) and Bush Heritage (purchasing land and managing it for conservation) already pursue these ecosystem corridor objectives. Similarly State Governments and the Commonwealth Government are involved in the creation of ecosystem corridors



Major corridor initiatives in progress or planned in Australia: from Witten et al, CSIRO June 2011

All of this is fairly conventional ecosystem thinking. What may be useful is the idea that there could be one overall conceptual framework that operates from the smallest street in suburbia through urban and rural ecosystem networks to a transcontinental bio-system corridor connecting the Southern Ocean via Habitat 141 in Victoria and the Trans Australia Ecolink corridors in South Australia and the Northern Territory to the Timor and Arafura Seas. And this may only be a beginning.

This whole ecosystem scenario can be thought of as a single fractal system. It is a system that comprises self-similar systems at many scales. While the dimension may be dramatically different the pattern at the local, regional and continental scale remains the same. It is the pattern of the sponge that ties the whole thing together.

Within this conceptual framework we have a management strategy for a single tree in Carlton all the way through to repairing the ecosystem of the continent. So be it.

If the idea ties the ecosystem together geographically it may also serve to provide common ground for the whole nation politically. It offers the prospect of the urban and rural peoples of Australia finding themselves engaging actively in a single common endeavour – that what is happening in the Pilbara or Cape York is recognisably just another manifestation of what is happening in Central Melbourne or the middle suburbia of Brisbane or in some small country town almost anywhere. It brings my backyard and the outback together within a single framework. Surely, this would be ‘a consummation devoutly to be wished’.

Allan Rodger
13th November 2012

Notes

See: Copenhagen Institute of Interaction Design and the life of Bill Moggridge

Allan Rodger, A Submission to the Consultation Process
City of Melbourne Urban Forest Strategy: Making a Great City Greener, 2012 -1232
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