

A city in its hinterland: sustainability assessment in the changing world

Author: Jack Krohn

Melbourne, capital city of the State of Victoria, prides itself on its livability. Sustainability is perhaps a greater challenge. Melbourne nestles in a belt of “green wedges”, a peri-urban hinterland now recognised through planning legislation and land use controls. If we are to track the city’s progress towards sustainability, how should we assess the contribution of the green wedges?

The green wedges host high value agriculture, resources and infrastructure for the neighbouring city, tourism and recreation facilities, biodiversity and iconic landscapes. The city imports essential food, water and services from the green wedges, and provides markets for many green wedge businesses. This paper seeks to place the city and its green wedges in context with each other and offer pathways for assessing the strength of the connection between the sustainability of the city and the hinterland in which it has grown.

Melbourne’s “green wedges” have been known by that term since the 1960s, when it appeared in a Town and Country Planning Board publication¹. However, the benefit of open green spaces around the city had been recognized from the very early years of Melbourne’s development, in the 1830s and 1840s, and central parklands such as Fitzroy, Treasury and the Royal Botanic Gardens are among the surviving legacies of that vision².

In the period of rapid growth after World War Two, under the twin drivers of immigration and increasingly affordable access to private motor transport, the city’s footprint spread expansively. The Melbourne and Metropolitan Board of Works, at that time responsible for town planning, developed a vision of a city growing along major transport corridors, separated by fingers or wedges of non-urban land³. These became the “green wedges” supported by the conservative government of Premier Rupert “Dick” Hamer in the 1970s, when the environment movement was finding its feet in mainstream Australia.

Over subsequent decades, however, the city continued to sprawl, despite a succession of metropolitan policy statements that reiterated green wedge principles^{4,5}. It was not until the Bracks Labor Government in 2002 introduced a statutory Urban Growth Boundary as part of its *Melbourne 2030* strategy⁶ that formal protection was afforded to the green wedges. Since then, changes to the Urban Growth Boundary require ratification by both Houses of State Parliament, and significant changes have been considered only through large-scale strategic processes.

The current total area of designated green wedge land amounts to some 646,000 hectares, about two thirds of which is privately owned freehold land. The remainder includes forested closed water catchments that supply much (but not all) of the water used by the city, State forest, conservation reserves including National and State Parks and many smaller parks and reserves serving various public purposes. The green wedges straddle 17 municipalities (of 31 that comprise the metropolitan area), and

extend to the outer limits of those municipalities; the overall area is asymmetrical, extending over 100 kilometres from the city centre eastwards but less than 35 kilometres northwards (see Fig 1). Beyond the green wedge Councils lies a ring of largely rural municipalities that badge themselves as “peri-urban”; most have population centres and economies that look substantially towards the neighbouring capital city, which houses almost 70% of the State’s population⁷.

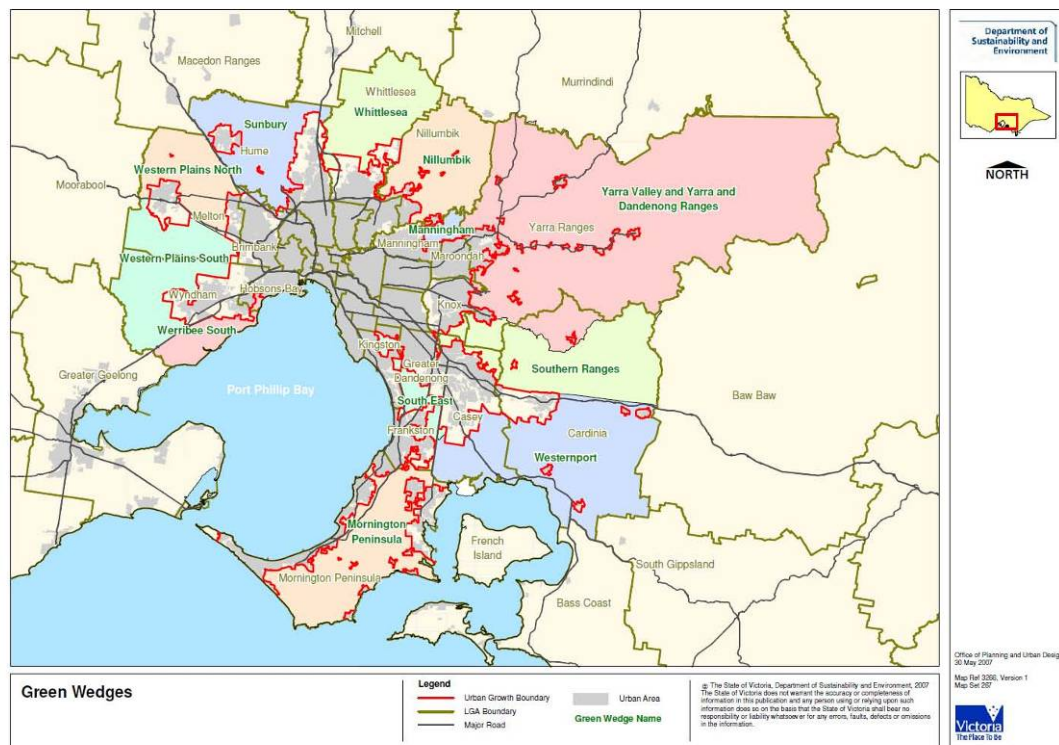


Fig. 1: Map of Melbourne and its green wedges.

In a simple ecological sense it could be argued that Melbourne, like most if not all major cities, is inherently unsustainable. Its people and businesses use economic processes to import goods and services, from overseas as well as from elsewhere in Victoria and Australia.

If we include the green wedges as part of “the city”, the geographic area includes about 40% of the city’s water catchments and storage capacity, and produces some \$1.2B of agricultural products annually. Some produce, surplus to the city’s consumption needs, is exported, helping to counter imported products.

Energy is another key import. Melbourne is connected to the national grid, to which Victoria contributes power generated from brown coal in the Latrobe Valley, about 150 km east of the city. Citizens can purchase “green power” (at a premium price), generated from renewable sources including windfarms. Petroleum products and natural gas are imported from the Bass Strait oilfields and from overseas.

While the administrative extent of the green wedges and the peri-urban municipalities can be mapped precisely, the functional hinterland of the city extends beyond those administrative lines. Most of the peri-urban municipalities are partly within commuting distance of Melbourne, including some towns that serve a dormitory

function for the capital. So the statutorily designated green wedges cannot be equated with the working hinterland of the city.

It could be suggested that the more broadly the city is set within its hinterland, the closer the integrated entity will approach sustainability. The larger the hinterland, the more it can provide of the city's essential consumables such as water, energy, clean air and so on. For example, the Thompson Reservoir, outside the city's green wedges comprises almost 60% of Melbourne's water storage capacity. When Victoria's first desalination plant is commissioned (scheduled for late 2011), the metropolitan water harvesting area will extend into Bass Strait.

However, extending the hinterland even to include all of Victoria (which comprises over 200,000 km²) would not necessarily create a sustainable entity. According to the Victorian Commissioner for Environmental Sustainability the ecological footprint of Victoria is three times larger than the world average. "If everyone lived like Victorians, almost four planets would be needed"⁸. The process of generating electricity by burning brown coal is a large factor in this equation.

There are trends working towards the positive side of the sustainability equation. Public transport patronage has risen significantly in recent years, especially commuter travel within the metropolitan area. Upgrades of service and infrastructure are needed (and are being planned) to enable patronage to continue to grow⁹. Commuter use of bicycles has also risen, and is promoted by Bicycle Victoria through Ride to Work Day (95,000 registered participants in 2009¹⁰), supported by employers who provide changerooms with showers and lockers in many city buildings.

Many Melbournians have also installed solar-powered hot water services, solar roof panels linked to the grid (creating power bill credits when power generation is surplus to household use) and rainwater tanks for non-potable use. Water tanks contribute to urban stream health by reducing the flood peaks as some rainfall is diverted to tank storage rather than speeding via stormwater drainage systems into creeks and rivers.

Progressively, more of the city's residential expansion is being directed north and west, into flat grassy volcanic plains terrain. Unlike the older eastern suburbs, there is little "bushland" to keep as local reserves that can provide a biodiversity shop-window for neighbouring residents. House-blocks (and households) are shrinking as houses themselves grow (mean household size shrank from 3.0 to 2.6 persons between 1981 and 2006, while new dwellings increased in floor area by 25.4% between 1984-85 and 2002-03⁷). Fewer homes include a garden or vegetable plot. Food is bought rather than grown, internal air is cooled or warmed rather than windows opened. New appliances may be five star or better, but they are being used more. Because of the greenhouse gas contribution of Victoria's major electricity generation process, Victorians who use air conditioners to address the increasing numbers of hot days projected by climate change models will add to the atmospheric load that is driving the climate change – a small, ironic example of a positive feedback loop.

So how does a city in an arguably unsustainable State strive to achieve sustainability? How can its non-urban hinterland contribute? And how can its sustainability, or its progress towards sustainability, be assessed?

The Commissioner for Environmental Sustainability's sobering appraisal might inspire some to strive through changed habits and choices to redress the balance. However, others might feel overwhelmed by such severe and broad-ranging problems.

It has been suggested that in climate change the shortest distance is from denial to despair. The same might apply to the sustainability dilemma. So how can we reduce the risk of community apathy, especially in Victoria's highly urbanized society?

Climate change manifestations – heat-waves, bushfires, storms and so on – remind us that we still live in an environment that we do not control. We can choose to ignore the environment – perhaps an easy option from within our air-conditioned, double-glazed, electrically-lit homes – but it will still be there. Or we can acknowledge the environment as the essential context of our lives. But to do so we need an awareness of the environment, not just as we have modified it, but as an amalgam of natural, dynamic processes that surge, fluctuate and continue, acknowledged or not. The non-urban hinterland of the city lets urban residents experience the environment more directly and increase their understanding of society's ultimate dependence on the continued health and function of the environment.

The key issue is not to demonstrate at a point in time that the city is or is not sustainable. We need to track progress over time towards or away from sustainability. It may be possible to devise indices that take account of carbon emissions and sequestration, water use and reuse, energy imports and exports, exports and consumption of local food. The hinterland represents an opportunity to offset impacts of urbanization locally, and for the city and its residents and businesses to take local responsibility for achieving those offsets.

A step in this direction has been proposed through the recent strategic process to review Melbourne's Urban Growth Boundary¹¹. Within both the existing Boundary and the proposed expansion are many small patches of remnant native grassland, a vegetation community listed as threatened at both State and national levels. The review process has identified in the green wedges two large blocks (see Fig. 2) totaling about 15,000 hectares, containing some of the best remnants of the volcanic plains native grassland that used to extend across western Victoria. It is now proposed that these blocks, almost all currently in private ownership, be acquired and managed to provide offsets for grassland loss within the expanded Urban Growth Boundary. Costs will be met by offset payments collected from the private sector developers who will progressively carry out the urban developments that will accommodate Melbourne's population growth and housing demand. The liabilities and costs to each developer will be calculated in objective units known as habitat hectares.

Many conservationists understandably bemoan ongoing losses of a rare and depleted vegetation community. However, the offset proposal will enable co-ordinated, funded reservation and management of habitat parcels large enough for fauna species that cannot survive in scattered fragments of only a few hectares each. Large, formally protected and well-managed grassland reserves may be resilient enough to sustain visitor pressure and interpretation, encouraging urban residents to value them and appreciate their subtle conservation features.

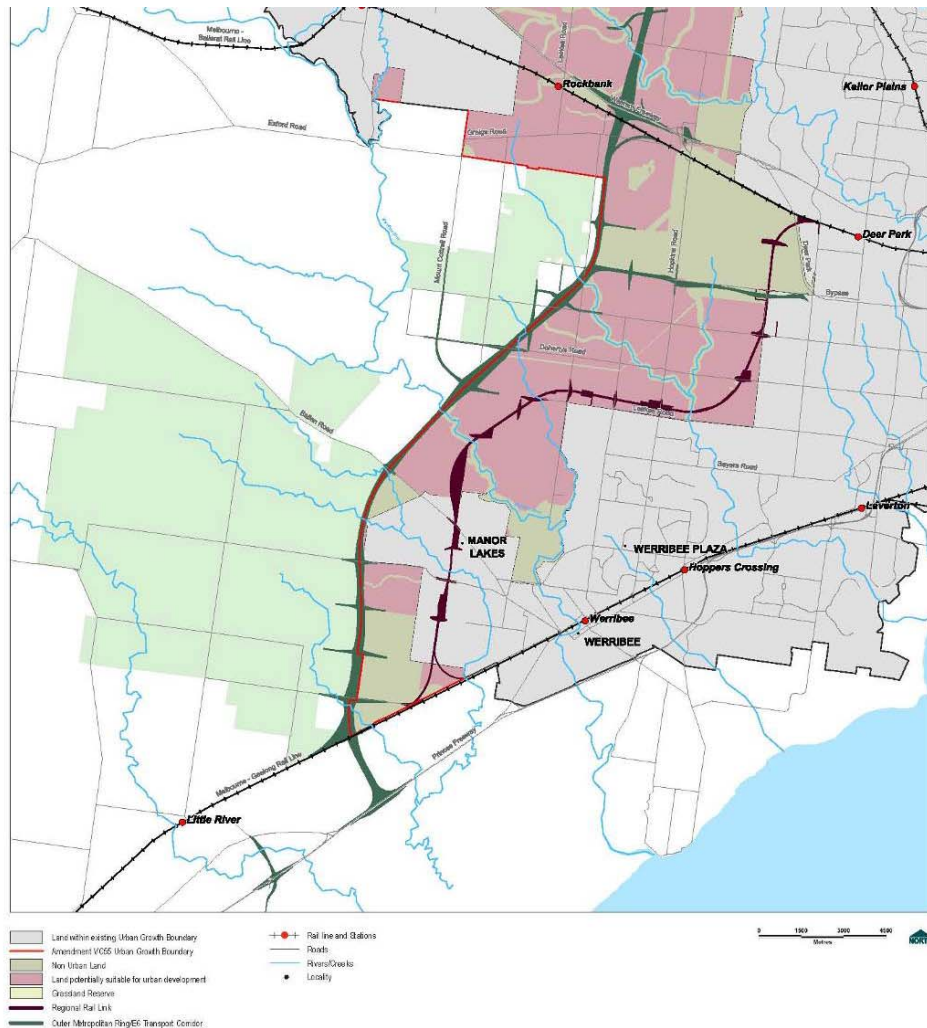


Fig. 2: Proposed grassland reserves in Western Plains South Green Wedge¹¹

Compensatory conservation reserves might be provided more cheaply further from Melbourne. But the very proximity of the new reserves to the urban population of the city adds to their value, because of their accessibility and visibility. As more people accept that protecting viable examples of threatened ecosystems is beneficial, society becomes more likely to support ongoing environmental programs, even at a cost.

Urban residents growing their own vegetables (watered by stormwater harvested from their roofs), choosing to purchase green wedge grown vegetables over those from interstate or overseas, or enjoying and learning from visits to green wedge conservation reserves are qualitative benefits, but still a legitimate factor in the overall assessment of the city's sustainability performance. The hinterland links the built environment of the city with its natural context, directly and visibly. While Melbourne might still have a long way to travel before it can achieve ecological

sustainability, the distance is less and the journey more feasible if the hinterland is considered to be an integral part of the city entity.

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