



GREEN BUILDINGS PLAN

Harnessing the efficiency and innovation revolution

Zero carbon buildings by 2040

The Greens will harness the massive opportunity to reduce carbon pollution and create healthier places to work through the establishment of a Green Buildings Fund. By investing in innovation and refurbishment, we create jobs, drive innovation, and cleaner, greener cities.

The Greens recognise the massive opportunity to reduce carbon pollution, drive innovation and create new jobs and more comfortable, healthy places to work, and transform our cities to cooler, more liveable places to live, work and play through a large scale Green Buildings program.

Green buildings are cheaper to run and good for business. Recent data shows green buildings consume as much as 80% less energyⁱ after energy efficiency retrofits.

Australia's commercial buildings account for about 10% of our national energy consumptionⁱⁱ and represent the opportunity for some of the most significant pollution reduction using the lowest cost using technologies that are already availableⁱⁱⁱ.

In 2014 just 8% of Australian buildings were rated at the highest NABERS (National Australian Built Environment Rating System) category, and just 18% of all CBD office space had achieved a Green Star rating^{iv}.

> THE GREEN BUILDINGS PLAN

To keep global warming within 1.5° degrees, to support the Greens' plan to double energy efficiency by 2030, and to reach net zero carbon pollution by 2040^v the Greens will introduce:

- **A national target of 100% zero carbon buildings by 2040**
- **A new \$100m annual loan facility through the CEFC for large scale retrofits of commercial buildings** with a focus on mid-tier commercial buildings (small and medium size businesses)
- **A new \$50m annual grant funding for new buildings** to achieve 'world leadership' 6 Star Green Star certification or an equivalent rating
- **A new \$10m Green roofs and walls fund** and a requirement for any buildings receiving government funding to include green walls or roofs
- An urgent review and upgrade of the **National Construction Code** energy performance standards with a trajectory to net zero emissions by 2040, and an amendment of the Code to include end-of-trip facilities for bicycle users

- Incentives for local governments, worth \$10.1 million over forward estimates, to enroll commercial building owners in Environmental Upgrade Agreements.

> BUDGET IMPLICATIONS

The Parliamentary Budget Office has estimated this plan to cost \$62.1m per year over ten years.

The cost over forward estimates is \$258.4 million.

> RETROFITTING COMMERCIAL BUILDINGS

The Greens propose that the Clean Energy Finance Corporation (CEFC) introduce a new annual loan facility worth \$100 million per year to enable large-scale retrofits of our commercial building stock.

It's proposed the focus is on Australia's 'mid-tier buildings', including offices, shopping centres, schools, hospitals, hotels, and small to medium sized businesses and organisations.^{vi} This is because, according to the Australian Sustainable Built Environment Council (ASBEC), offices and retail buildings represent the largest share of opportunity in the commercial sector, and owners face significant barriers to refurbishment programs and realising energy savings.

The opportunity is significant.

It's estimated there are 80,000 mid-tier buildings across Australia, and mid-tier offices account for about 52 million square metres of the 64 million square metres of office space in Australia^{vii}.

The *Beyond Zero Emissions Buildings Plan*^{viii} includes a number of case studies that modelled the impact of retrofits on various types of commercial buildings, and found

- 80% overall energy reduction in a pre-1945 Brisbane office building
- 78% reduction in a 1980s era Sydney office block



NATIONAL URBAN FORESTS PLAN

Greener, cooler, healthy cities

The Greens' plan to protect and regenerate natural habitats in our cities

The rapid growth of our cities has come at a cost to our natural environment. Better protection for these remaining areas and a new network of green corridors through our cities and suburban streets will improve the quality of life, ensure wildlife and natural habitats are preserved for future generations, and transform our cities to cooler, more liveable, healthier places to live.

The Greens have a plan to keep our city cool and beautiful with a protected network of Urban Forests, linked together with green corridors, tree-lined streets, parks and backyard gardens.

With smart planning and commitment to transforming our cities we can all live within a 5 minute walk of our local park or greenway, stay cool in summer, and protect our precious natural places.

> AN URGENT TIPPING POINT

Australia's cities have experienced rapid and uncoordinated growth that has resulted in the loss of unique natural habitats like forests, bushland, woodlands, wetlands, and grasslands. Urban sprawl and inappropriate planning in all of our cities is eating into rural and natural areas, impacting on some of our most endangered habitats and species.

Australian wildlife is under great pressure from our expanding cities and suburbs encroaching on increasingly threatened natural habitats. Establishing a network of Greenways— which are connected corridors of native vegetation and urban bushland in each city provides the best insurance to protect endangered species and also improve the quality of life in our built environment.

The city is where most of us live – but we are treating nature as something to see and experience outside the city. The Greens are standing up for cities that protect and enhance natural environments, which in turn nurture us through healthy air, clean water, and places to reflect and enjoy our natural world. Green spaces in cities act as lungs for the cities, and also promote our physical and mental health.

> OUR VISION

The Greens' **National Urban Forests Plan** includes the proposal to protect and re-grow corridors of biodiversity at the metropolitan scale in each of our 18 major cities, and by

2030 protect these Greenways as a series of Urban National Parks.

The main goal of the Greens initiative is to provide a new national framework for protecting and regenerating green space in our cities. Greenways are connections across the metropolitan area that link up areas of natural habitat, while supporting other land uses such as conservation, transport (walking and cycling) and recreation.

The Green Streets Fund is an ambitious plan to transform our cities.

The long term goal is to create a healthy and protected Urban National Park in every Australian major city, comprised of a series of significant protected bushland areas, connected together by metropolitan scale Greenways (or urban forests), green streets and household backyards across the metropolitan area.

The Greens propose \$25 million per year over ten years for:

- **\$15m Urban Forest Acquisition Fund** to enable the states to purchase areas of high conservation value natural habitat in urban areas, particularly areas under direct threat from development or neglect
- **\$5 million Community Grants** to enable local communities to contribute to the Greenways through precinct-scale or neighborhood scale plantings or infrastructure such as amphitheatres, interpretive centres, walking trails and so on
- **\$1m Household grants** to subsidise local area biodiversity plantings in front verges and backyards, to enable households to directly link in to the local greenway; made available via local Landcare groups, local councils and native nurseries
- **\$1m to assist states and local councils develop local Urban Forest Plans** including mapping and planning linkages
- **\$2m to establish an Aboriginal Stewardship Committee in each state** to steer planning and mapping of the greenways networks, and to engage Aboriginal businesses to develop cultural trails and deliver cultural, education and eco-tourism programs

- **\$1m for ongoing maintenance** including tree audits every 3 years to measure tree canopy cover and health, and an interactive website with mapping tools and education resources
- **Introduce a federal moratorium on clearing of urban bushland** until each city has completed Strategic Environmental Assessment and an assessment of by the Threatened Species Commissioner
- **Establish an Urban Biodiversity Taskforce** within the re-established Major Cities Unit, responsible for coordinating the Greenways initiative from a planning and infrastructure perspective
- **Create a new category of National Park called ‘Urban National Parks’ by 2020 - consisting of a series of interlinked urban forests and greenways.** This will be added to Australia’s National Reserve System, affording it maximum protection and status possible in Australian law. Australia’s National Reserve System currently includes and manages about 70% of Australia’s protected habitats, including National Parks.

> BUDGET IMPLICATIONS

The Parliamentary Budget Office has estimated this plan to cost \$100 million over forward estimates.

> WHAT WOULD IT LOOK LIKE IN YOUR CITY?

Greenways can range from small corridors created by local communities to large corridors that stretch across the many different landscapes of a metropolitan area.

It works at three scales:

- **At the metropolitan (and bioregional) scale:** critical habitats under threat are given permanent protection and a new network of dedicated walking and cycling paths that allow access to the Greenways.
- **At the local street scale** a new ‘urban forest’ is regrown along the corridors in between areas of existing natural habitats and parks. Greenways offer the opportunity to turn our local streets and verges into a series of biodiversity rich, linear parks.
- **At the individual household level,** everyone would be able to contribute directly to the Green Streets project through planting native species in their back yards and front verges.

The Greens goal is for all residents of Australian cities to live within a 5 minute walk of a Greenway and a 10 minute bicycle ride of a protected reserve of regional significance.



Case study: Visualisation of City Road, Southbank.
Source: Melbourne’s Urban Forest Strategy

> BENEFITS

Urban forests and green spaces in our city offer valuable environmental, economic and health benefits and should be viewed as the missing part of our infrastructure and healthcare systems.

Green spaces improve our city’s liveability, providing places to socialise, exercise and somewhere for our kids to play. People who live in greener suburbs are more likely to have active lifestyles including walking and cycling.

According to a federal government report, heatwaves kill more Australians than all natural disasters combined including bushfires, floods and cyclones, with about 500 recorded in 2011. The same report warns the number of heatwave-related deaths in Australia’s major cities will quadruple by 2050, with Perth and Brisbane predicted to be hit hardest. With our summers already longer, hotter and more extreme, it’s vital to start planning now to reduce the impact of the Urban Heat Island effect, which can add up to 4 degrees to temperatures¹.

Greenways and Urban forests maintain environmental quality and act as lungs for the city, significantly reducing air pollution. Urban forests also cool the temperature of cities and remove

carbon from the atmosphere, essential in the fight against global warming. It is estimated that street trees can cool urban communities by 4-6 degrees Celsius. They can also sequester between 11-31 tonnes of carbon per hectare. Urban wildlife also relies on green spaces in cities and urban areas for their food and habitat.

All of these services have significant economic benefits. For example, the Brisbane Urban Forest initiative estimated 575,000 street trees are providing an annual \$1.65 million in benefits for air pollutant removal, carbon sequestration and rainfall harvesting.

> CONNECTING TO CULTURE

“The establishment of Cultural Trails offers cultural restoration, individual and community healing and the creation of a new Australian Culture that recognizes, respects and applies the best elements of Aboriginal and Non-Aboriginal Culture in Australia.”

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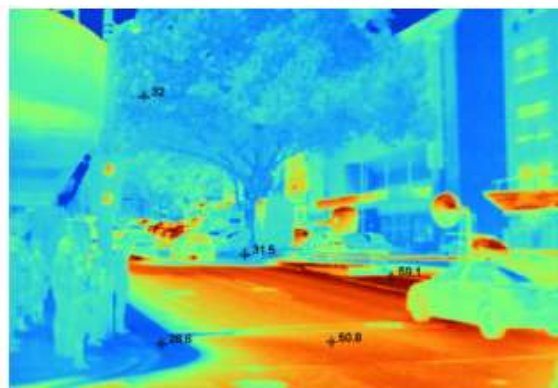
The National Urban Forests Plan will provide funding to establish and integrate a layer of Cultural Trails – which are connected corridors of protected urban bushland that knit together sites and songlines of significant cultural value to Aboriginal and Torres Strait Islander peoples. This idea draws on the work of Cultural Corridors Inc., a not-for-profit organization established by WA Noongar elder Dr Noel Nannup, which has identified and mapped significant sites to create a network of Cultural Trails. Some of these sites can be used for educational and cultural activities as well as being sites where cultural-tourism and eco-tourism can thrive.

To achieve this, it will provide \$2m nationally per year over ten years to establish an Aboriginal Stewardship committee to steer the planning and mapping of the greenways networks in each major city, engage Aboriginal businesses to develop cultural trails and deliver cultural, education and eco-tourism programs within the greenways network, and legislation to provide higher levels of protection for Aboriginal heritage and significant sites.

> SAVING OUR ICONIC SPECIES

Australian wildlife is under great pressure from our ever expanding cities as they encroach further into sensitive and diminishing habitats like coastal reserves, wetlands, grasslands and forests.

As reported on Four Corners in 2012, as our cities expand and bushland is cleared for new residential developments, the displaced wildlife does not move on but is lost altogetherⁱⁱ, and even iconic species like koalas are being affected.



Heat image mapping of a Melbourne street shows the temperature difference between the street, buildings and tree canopy. Source: City of Melbourne

Development in expanding suburbs around Port Macquarie, Coffs Harbour, the Gold Coast and the Redlands of south-east Queensland is having a huge impact on local koala populationsⁱⁱⁱ. Koala populations in NSW, Qld and ACT have dropped so rapidly that following a Greens’ initiated Senate Inquiry into the health of our koalas, this iconic species has been added to our national threatened species list^{iv}.

Iconic species like Koalas in Brisbane and the north coast of NSW, Southern Brown Bandicoots in Melbourne and Adelaide, and Carnaby’s Black Cockatoos in Perth are now federally listed as endangered, largely due to loss of habitat in our urban areas.

Greenways in each city provide the best insurance at the metropolitan scale to save these species and others across our 18 major cities, from the very real threat of extinction, and to provide vital corridors for food, habitat, and safe movement through our urban landscapes.

Our cities are also home to thousands of native species and rich biodiversity not found anywhere else in the world. Yet hundreds of species that are unique to the bioregions our cities also occupy are threatened with extinction, with land clearing being one of the biggest current threats^v.

> CASE STUDIES

City Greenways have been introduced in many cities around the world.

Melbourne: The City of Melbourne’s inspiring Urban Forest strategy aims increase Melbourne city’s canopy cover to 40% coverage by 2040, green the city’s vast rooftop spaces and dramatically increase biodiversity through planning the “urban forest of the future”.

New York: New York’s iconic High Line is a 1.6 km linear park built on a section of the former elevated New York Central Railroad spur, running along the lower west side of Manhattan. It has been redesigned and planted as an aerial greenway.

Singapore: The greenway movement in Singapore began as a proposal for an island-wide network of green corridors, in the late 1980s. Singapore capitalised on the under-utilised land along canals and beside major roadways for a pilot greenway project. The scheme has had strong public support and Singapore is now seen as a model for greenway planning for other rapidly growing cities in Asia^{vi}.

Sydney: In 2012 NSW Greens MP Jamie Parker presented a petition with over 10,000 signatures in support of the *Cooks River to Iron Cove GreenWay* in Sydney's Inner West^{vii}.

With support of four local councils and funded by the NSW Environmental Trust the project is now complete. It provides an urban green corridor that has a safe walking and cycling path, recreational areas and hosts a variety of community and arts projects, and home to a range of wildlife including an endangered population of Long-nosed Bandicoots.



Sydney's Cooks River to Iron Cove Greenway map¹.

http://www.ashfield.nsw.gov.au/page/greenway_sustainability_project.html ;
<http://www.greenway.org.au/index.php/about-the-greenway>

> INACTION FROM OTHER PARTIES

The Coalition's recent budget provided \$20m over two years from 2018 to support green corridors and urban forests – though this was simply reallocated from the National Landcare program, is not at a scale large enough, and is at direct odds with its record on approving catastrophic levels of urban bushland and wetland clearing. The Coalition is also committed to handing over the important layer of federal oversight and protection of regionally significant natural environments in our urban areas to the states.

ⁱ Australian Government Department of Infrastructure (2013) State of our Cities Report at

<https://infrastructure.gov.au/infrastructure/pab/soac/index.aspx>

ⁱⁱ <http://www.abc.net.au/4corners/stories/2012/08/16/3569231.htm>

ⁱⁱⁱ Darryl Jones "Koala Cul-de-sac? Development a dead end for wildlife" *The Conversation* 12/8/2012 <http://theconversation.com/koala-cul-de-sac-development-a-dead-end-for-wildlife-9047>

^{iv} Senate Inquiry into the status, health and sustainability of Australia's koala population

http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=ec_ctte/completed_inquiries/2010-13/koalas/index.htm

^v https://audit.wa.gov.au/wp-content/uploads/2013/05/report2009_05.pdf

^{vi} <http://www.sciencedirect.com/science/article/pii/S0169204604001331>

^{vii} [http://www.jamieparker.org.au/nsw-parliament-hears-10000-strong-petition-build-the-greenway-now/;](http://www.jamieparker.org.au/nsw-parliament-hears-10000-strong-petition-build-the-greenway-now/)

- 83% reduction in a Melbourne school, and
- 63% reduction in a large Sydney shopping centre.

Case study: Brisbane

Brisbane's **Norman Disney Young** building spent \$980,000 on an extensive retrofit which refurbished all of its mechanical



services and electrics, and replaced all appliances and equipment with the most energy efficient possible. The entire refurbishment occurred over just one weekend. It lifted the NABERS energy rating from 0 to 5 stars and reduced energy use by 54%, carbon emissions by 300,000 tonnes annually, peak demand on the grid by 33%, and is also saving \$64,000 on energy bills each year^{ix}.

> WORLD LEADERSHIP IN NEW BUILDINGS

To really kick-start the green building revolution in Australia, we need to provide stronger incentives and regulations for Australia's new buildings. Australia is rated 17th in the world on the Global Innovation Index, and we lag behind most OECD countries when energy efficiency and sustainability requirements in building codes for new buildings are compared^x.

Australia is lagging globally in energy efficiency. In 2014 we were ranked 10th out of the world's 16 largest economies, and we have been nominated as having one of the highest energy intensities in the commercial building sector, only underperformed by Italy^{xi}.

Yet world leadership in green buildings can be achieved for the same or minimal extra cost. Data from 34 Green Star projects over the last 12 months show that projects can deliver a Green Star rating for between 1% and 3% of their project budget^{xii}.

This is why the Greens propose a new funding stream of \$50 million per year to offer an 'innovation top up fund' of up to 2% of total construction costs, to cover the cost of achieving world leadership such as 6 Star Green Star buildings.

Case study: Sydney



Sydney's new Science and Graduate School of Health Building at the **University of Technology Sydney** opened in 2016 and achieved a 6 star-Green star rating.^{xiii} Architects utilised recycled materials and natural light, installed solar

hot water technology, and a green roof which not only provides insulation and improves air quality, but also doubles as an outdoor recreational space.^{xiv}

> GREEN WALLS AND ROOFTOPS

Melbourne University urban planning professor Brendan Gleeson said the first stage of a "green renovation" of our cities would be the widespread installation of green roofs. Rooftop and vertical gardens can reduce carbon and air pollution, act as thermal insulation for buildings, can help prevent flooding by absorbing heavy rain, and reduce the urban heat island effect.

Case study: Toronto

In 2009, Toronto became the first city in North America to mandate green roofs on new developments including commercial, institutional and many residential. The city's initiative is a wonderful success story, with 260 green roofs and 196,000 square metres of green roof area created since 2010.



Image: 6 Star building garden in Toronto.
Source: greenstar.com



Image: Green roof at Toronto's Historical Equipment Group Inc.

> ENVIRONMENTAL UPGRADE AGREEMENTS

The proposal would pay \$5.00 per tonne of carbon abatement achieved through Environmental Upgrade Agreements (EUAs) to local councils as an incentive for them to sign up commercial building owners for agreements. The payment would occur over the 10-year life of the projects and would only be available for premises that are not owner-occupied.

EUAs are a financing mechanism, facilitated by councils, which improve access to funding for building upgrades to improve energy efficiency and reduce waste and water use. Banks and other lenders provide funds to building owners for upgrades with the council collecting loan repayments through their rates system. This arrangement increases the security of the loan, therefore reducing the risk borne by lenders and potentially improving the terms of the loan for the building owner.

At present several councils across Victoria and New South Wales have engaged in EUA schemes, with Victoria recently having amended the Local Government Act (1989) to allow all councils to engage in such schemes.

> INACTION FROM OTHER PARTIES

The Coalition's first budget abolished the National Urban Policy which was driving innovation and sustainability of the built environment and discontinued the Liveable Cities scheme which provided funding for world class new build demonstration projects. They have attempted to abolish the CEFC numerous times. Disappointingly, Labor voted with the Coalition when they scrapped the effective, low-cost Energy Efficiency Opportunities Scheme which helped businesses cut energy use and power bills.

ⁱ Green Building Council Australia 2012

ⁱⁱ Green Building Council (2015) *Mid-Tier Commercial Office Buildings in Australia: A national pathway to improving energy productivity* at <https://www.gbca.org.au/uploads/97/36449/Mid-Tier%20Commercial%20Office%20Buildings%20Pathway%20report.pdf>

ⁱⁱⁱ ClimateWorks and Allen Consulting Group research, cited by Green Building Council submission to the ERF, 2014

^{iv} <http://theconversation.com/green-building-revolution-only-in-high-end-new-cbd-offices-24535>

^v The Greens post-2020 targets announced in April 2015 are for a 40-50 per cent emissions reduction on 2000 levels by 2025; a 60-80 per cent reduction by 2030; and net-zero pollution by 2040.

^{vi} This is also because many premium or 'A-grade' buildings have already undertaken upgrades and are moving towards Green star certification – but the rest of the commercial building sector have lagged in implementing energy retrofits and have much lower energy efficiency ratings, if any at all. Green Building Council (2015) *Mid-Tier Commercial Office Buildings in Australia: A national pathway to improving energy productivity* at <https://www.gbca.org.au/uploads/97/36449/Mid-Tier%20Commercial%20Office%20Buildings%20Pathway%20report.pdf>

^{vii} Australian Sustainable Built Environment Council (2016) *Low Carbon, High Performance. How buildings can make a major contribution to Australia's emissions and productivity goals.* May 2016.

^{viii} http://media.bze.org.au/bp/bze_buildings_plan.pdf

^{ix} See www.ndy

^x American Council for an Energy-Efficient Economy (2014) *2014 International Energy Efficiency Scorecard* at <http://aceee.org/files/pdf/summary/e1402-summary.pdf>

^{xi} 2014 International Energy Efficiency Scorecard at <http://www.thefifthstate.com.au/innovation/energy/australia-lagging-globally-on-energy-efficiency/65342>

^{xii} Green Building Council (2016) Green Building Day presentation

^{xiii} <http://www.uts.edu.au/about/faculty-science/news/innovation-meets-sustainability-inside-uts%E2%80%99-six-star-green-rated-building>

^{xiv} <http://www.sustainabilitymatters.net.au/content/sustainability/news/uts-opens-6-star-science-and-health-building-496763694>



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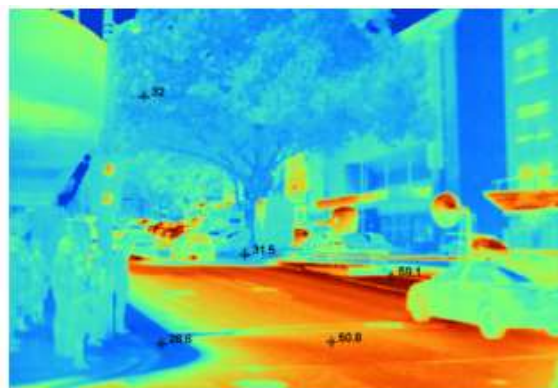
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> CASE STUDIES

City Greenways have been introduced in many cities around the world.

Melbourne: The City of Melbourne’s inspiring Urban Forest strategy aims increase Melbourne city’s canopy cover to 40% coverage by 2040, green the city’s vast rooftop spaces and dramatically increase biodiversity through planning the “urban forest of the future”.

New York: New York’s iconic High Line is a 1.6 km linear park built on a section of the former elevated New York Central Railroad spur, running along the lower west side of Manhattan. It has been redesigned and planted as an aerial greenway.

Singapore: The greenway movement in Singapore began as a proposal for an island-wide network of green corridors, in the late 1980s. Singapore capitalised on the under-utilised land along canals and beside major roadways for a pilot greenway project. The scheme has had strong public support and Singapore is now seen as a model for greenway planning for other rapidly growing cities in Asia^{vi}.

Sydney: In 2012 NSW Greens MP Jamie Parker presented a petition with over 10,000 signatures in support of the *Cooks River to Iron Cove GreenWay* in Sydney's Inner West^{vii}.

With support of four local councils and funded by the NSW Environmental Trust the project is now complete. It provides an urban green corridor that has a safe walking and cycling path, recreational areas and hosts a variety of community and arts projects, and home to a range of wildlife including an endangered population of Long-nosed Bandicoots.



Sydney's Cooks River to Iron Cove Greenway map¹.

http://www.ashfield.nsw.gov.au/page/greenway_sustainability_project.html ;
<http://www.greenway.org.au/index.php/about-the-greenway>

> INACTION FROM OTHER PARTIES

The Coalition's recent budget provided \$20m over two years from 2018 to support green corridors and urban forests – though this was simply reallocated from the National Landcare program, is not at a scale large enough, and is at direct odds with its record on approving catastrophic levels of urban bushland and wetland clearing. The Coalition is also committed to handing over the important layer of federal oversight and protection of regionally significant natural environments in our urban areas to the states.

ⁱ Australian Government Department of Infrastructure (2013) State of our Cities Report at

<https://infrastructure.gov.au/infrastructure/pab/soac/index.aspx>

ⁱⁱ <http://www.abc.net.au/4corners/stories/2012/08/16/3569231.htm>

ⁱⁱⁱ Darryl Jones "Koala Cul-de-sac? Development a dead end for wildlife" *The Conversation* 12/8/2012 <http://theconversation.com/koala-cul-de-sac-development-a-dead-end-for-wildlife-9047>

^{iv} Senate Inquiry into the status, health and sustainability of Australia's koala population

http://www.aph.gov.au/Parliamentary_Business/Committees/Senate_Committees?url=ec_ctte/completed_inquiries/2010-13/koalas/index.htm

^v https://audit.wa.gov.au/wp-content/uploads/2013/05/report2009_05.pdf

^{vi} <http://www.sciencedirect.com/science/article/pii/S0169204604001331>

^{vii} [http://www.jamieparker.org.au/nsw-parliament-hears-10000-strong-petition-build-the-greenway-now/;](http://www.jamieparker.org.au/nsw-parliament-hears-10000-strong-petition-build-the-greenway-now/)