

Liveability and sustainability: the potential of place-based precinct planning to help reduce emissions

190205 NSROC

Roderick Simpson, Environment Commissioner, Greater Sydney Commission

Slide 1 A metropolis with extraordinary natural assets



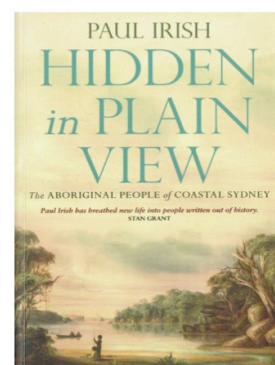
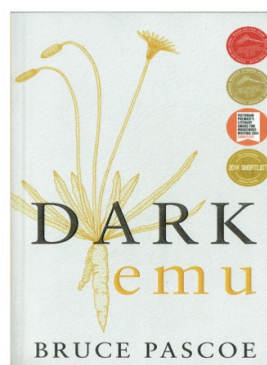
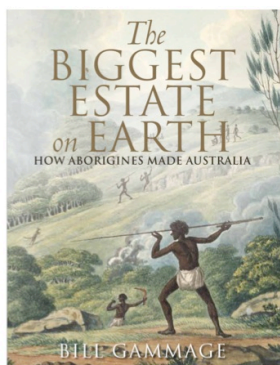
Thank you for the invitation to speak today, and I would like to acknowledge our the members of parliament , past and present that are here today, assembled mayors and councillors, general managers and senior staff, colleagues.

Slide 2 A legacy of custodianship over countless generations

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'if we care for country, it will care for us'



I too, would like to acknowledge the traditional custodians of the land on which we meet, the Darramuragal, Garigal, Cammeraygal, Borogegal people, the original custodians of this land on which we meet, and pay my respect to elders, past present and emerging.

I think we are coming to appreciate more and more the extraordinary culture that has cared for this country for millennia.

At the beginning of the Greater Sydney Region Plan, our Chief Commissioner has encapsulated and expressed the Commission's desire and commitment to incorporating aboriginal values at the beginning of planning.

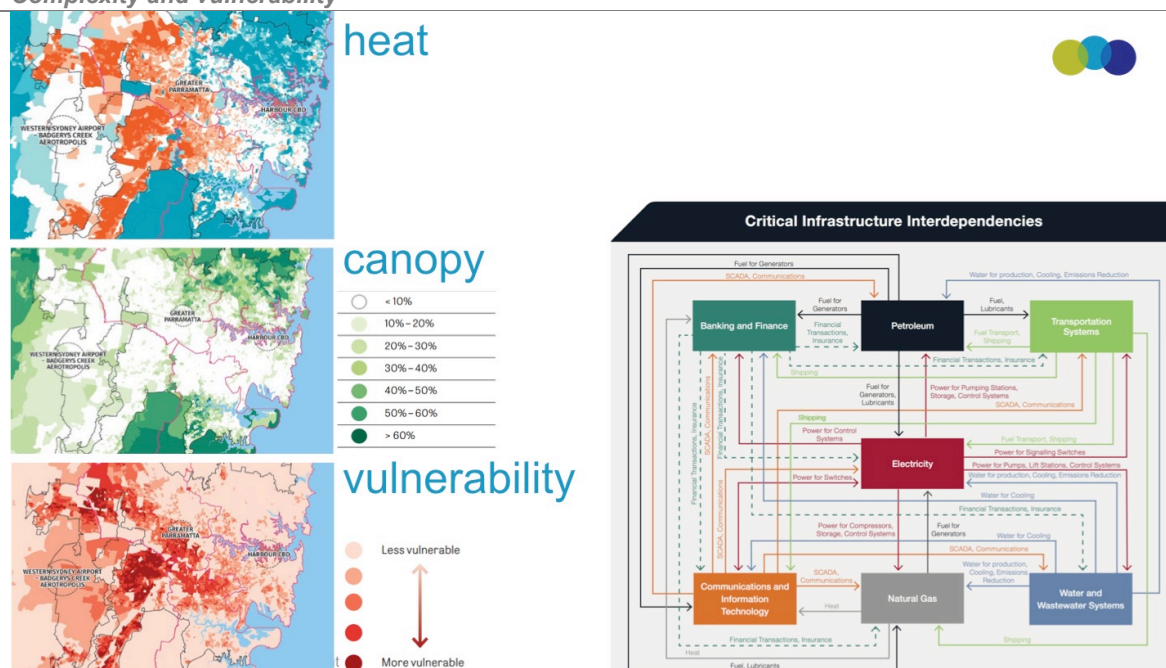
Perhaps the most important of these values, shared across Australia, is an idea, an ethos of caring for country that at the same time contributes to the well-being of its inhabitants.

An ethos expressed most clearly in this saying

'if we care for country it will care for us'

If we also now recognise that every part of the planet is now affected by our behaviour - it is reasonable to extend this ethos of caring for country to caring for the whole planet.

Slide 3 Complexity and vulnerability



The maps on the left show the variation in heat across the Cumberland Plain, the amount of canopy and the distribution of people that are particularly vulnerable to the effects of extreme heat. A 'resilience approach' is needed to respond to extreme heat that considers not just mitigating the heat through vegetation, irrigation and cool-roofs, but also the adaptive capacity of the population and the dependability of critical infrastructure. The diagram on the right shows the interdependencies of the systems as shown in the NSW Critical Infrastructure Resilience Strategy. <https://www.emergency.nsw.gov.au/criticalinfrastructure>

It is the Commission's responsibility to think about how the metropolis works as a whole - as a metropolis of three cities that is liveable, productive and sustainable - and think about the interdependencies that are clearly shown on this image.

You have heard from Fiona Morrison about the government's commitment to increasing the canopy cover- in fact it also is Objective 30 of the Greater Sydney Region Plan. But trees will take time to grow and, with the temperatures that we may experience in the west,

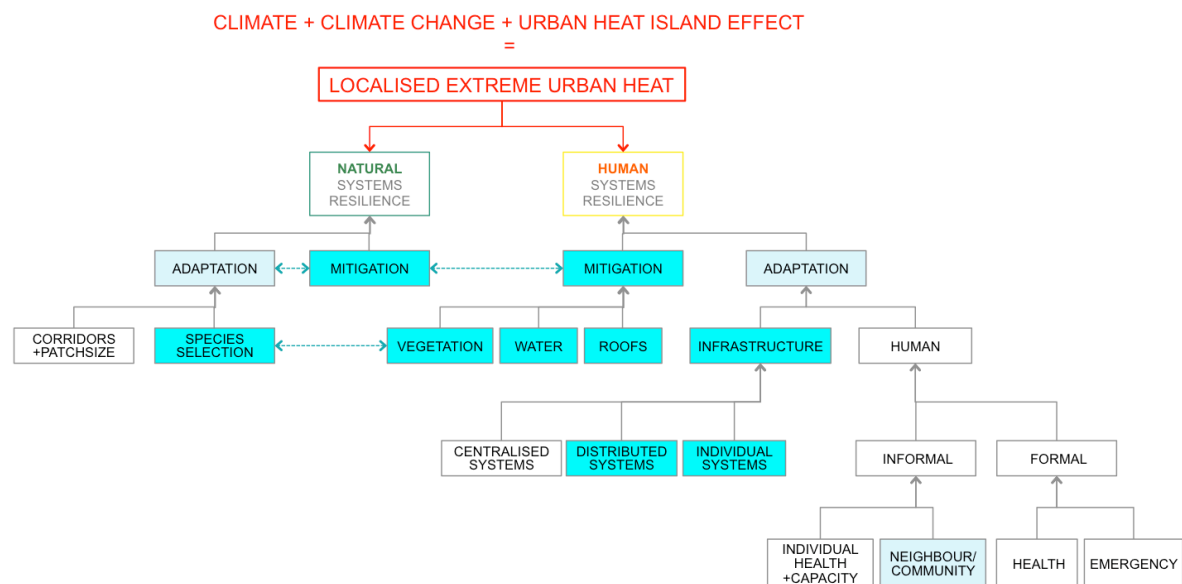
they will need to be irrigated, and even then we are still only talking about mitigating the extremes, talking the edge off if you like, but it will still be hot.

There is no question that we will need air-conditioning in these areas and that means that it will need to be an affordable and reliable power supply.

The resilience or vulnerability of one part of the city affects the city as a whole.

Figure 1 What is meant by a 'resilience approach'

'resilience approach' for responding to extreme heat



This diagram was not part of the NSROC presentation but shows the overall schema for a 'resilience approach' to responding to extreme heat. It includes the dependability of centralised systems (water, energy, comms) as well as both formal and informal human responses.

We can, and are, approaching this complexity in two ways:

Firstly, by continually improving our understanding of the city overall, and secondly by thinking about what can be achieved locally.

This means we can have a complete picture, while at the same time recognise the different character, opportunities and challenges of the diverse places that make up the city with a focus on liveability.

But local places also have role to play in addressing global issues.

Slide 4 NSW zero emissions by 2050 objective



FACT SHEET ACHIEVING NET-ZERO EMISSIONS BY 2050

The NSW Government has committed to an aspirational objective of achieving net-zero emissions by 2050.

One of the greatest challenges we face is climate change. In response the government has an aspirational objective of zero emissions by 2050.

As we all know, most of these emissions are due to the activities in cities, so a question is “what can we do in the city to the demand for energy and reduce emissions, and importantly to understand where we should act and what will be most effective?”

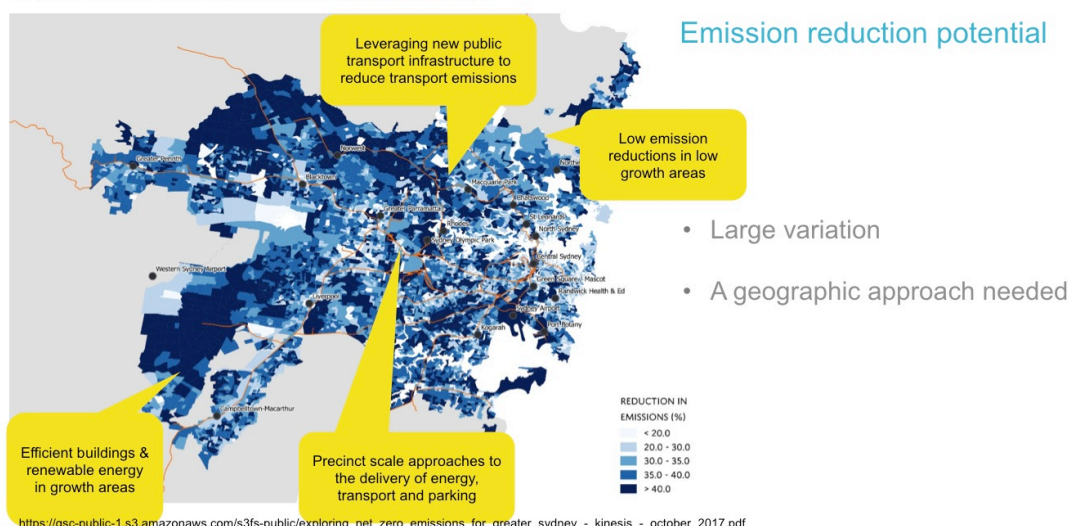
To come to grips with that question, to better understand the scale of the problem and possible responses we commissioned a study to look at what is possible.

Slide 5 *Potential emission reductions across the city*

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How can we be most effective?



https://gsc-public-1.s3.amazonaws.com/s3fs-public/exploring_net_zero_emissions_for_greater_sydney_-_kinesis_-_october_2017.pdf

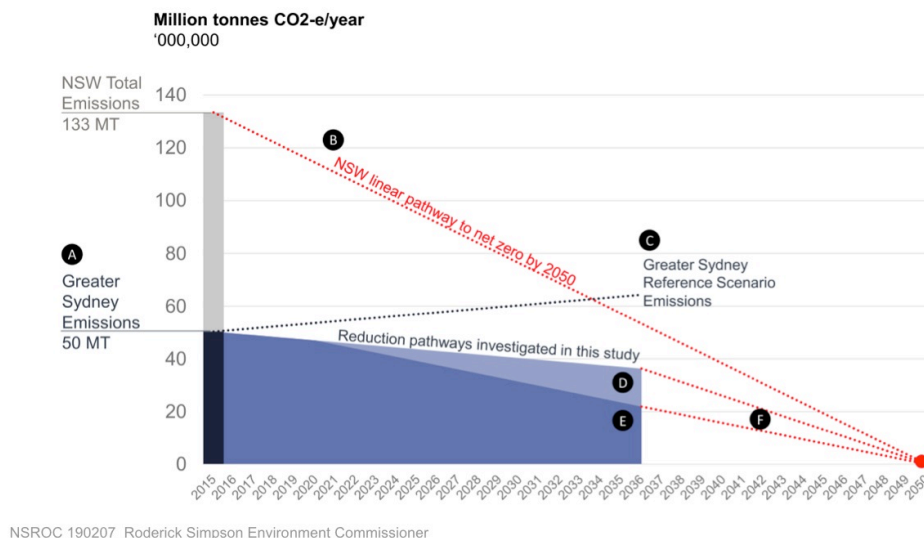
What this shows is that areas where there is the greatest change are also the areas where there may be the greatest potential for improved efficiency and less emissions.

I should stress that this is research to better understand what might be possible for the city to achieve.

The modelling included a wide range of initiatives: retrofitting of existing buildings, higher BASIX targets, more stringent building standards for all types of buildings, an assumption of reduced car use in accessible locations and lower car parking rates in those areas and a continuation and even ramping up of renewable energy requirements.

These initiatives are not current policy, but the purpose was to see what would be possible.

Here are the results of all of this;



Explanation: Emissions are measured according to the GPC (Greenhouse Protocol Communities). (<https://resourcecentre.c40.org/resources/measuring-ghg-emissions>) The red line is a hypothetical straight-line projection to zero. It should be noted that to achieve net zero emissions will still require significant offsetting (sequestration etc) in 2050 in addition to greatly improved efficiencies and renewable energy. This is due to activities that will still have carbon emissions. Most significantly, the graph shows that the 'reference scenario' shown as a dotted black line, that can be thought of as 'business as usual' would exceed the total amount of emissions for the entire state by 2036. The dark blue area shows the effect of all of the initiatives including an increase in renewables by 2036.

For more detail refer to the GSC commissioned study:

https://gsc-public-1.s3.amazonaws.com/s3fs-public/exploring_net_zero_emissions_for_greater_sydney_-_kinesis_-_october_2017.pdf

It shows that we need to do all of this, or similar, to keep on track, for the city to be doing its share if you like. It shows that we need to do much of this within the city as well as increase renewables.

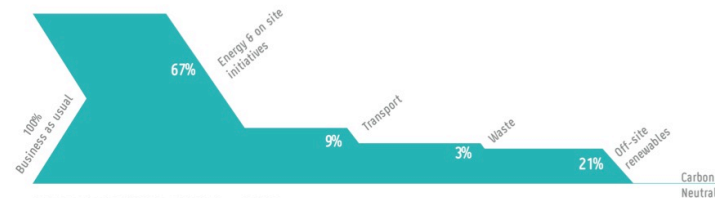
Of course, it is not that simple, but it is the reason we have put forward the idea of Low Carbon High Performance Precincts in the District Plans to investigate and develop these responses further. These are the areas that will be undergoing the greatest change and this work shows has the greatest potential to assist in reducing emissions.

This brings us back to place-based planning, and here of course is where local government has a major role as custodians, stewards and curators if you will of places.

We need to put even more emphasis on planning whole precincts and thinking about how all of the components can be organised to be more liveable but also more adaptable in the face of uncertainty.

For example, who really knows what the transport systems and vehicles will be like in 40 years' time; - our planning time-horizon? So, we need to think about street and road layouts, how we plan for parking and how it might be adapted in the future.

I thought I would just give a couple of examples.



Greenhouse Gas Emissions - Stage 1

FIGURE 3: Carbon Reduction Strategy
Source: Lendlease



http://c40-production-images.s3.amazonaws.com/other_uploads/images/498_Barangaroo_South_Roadmap_Summary_FINAL.original.pdf#1453225494
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Explanation: Barangaroo South has a number of design features that significantly reduce emissions. It is important to note that it is using the same calculation as the Zero Emissions report shown before, and that this methodology is also used by the C40 group and the National Carbon Offsets Standard. These standards are consistent with those used by companies to report their emissions and by investors in 'green bonds'.

<http://www.environment.gov.au/climate-change/government/carbon-neutral/ncos>

You are probably all familiar with Barangaroo, controversial in some ways, but a world leader in terms of its governance and how the zero-carbon strategy works for Barangaroo south.

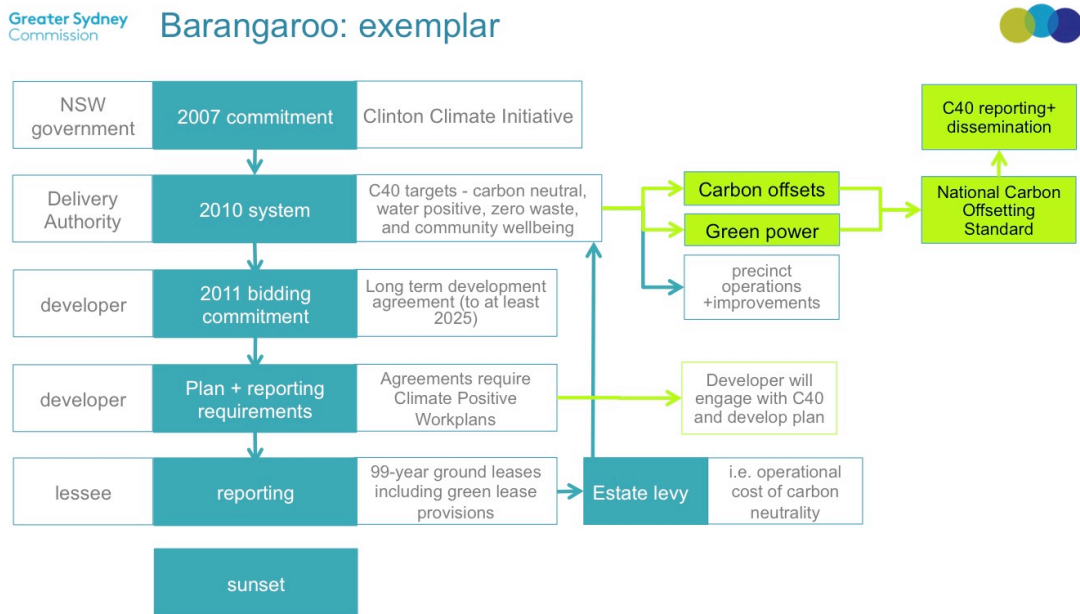
Barangaroo is a fully integrated development. What I mean by that from an environmental perspective is that it has a requirement to be zero-carbon and this is made possible by the governance that applies to the site.

You can see here a very simplified version of how it will achieve – improved efficiencies, onsite renewables, reduced transport, waste and offsite renewables.

It is fair to say that these are the common elements around the world.

There is nothing wrong with offsets or relying on offsite renewables. At higher densities this is essential.

But as you have seen it will still be necessary to do as much as possible within the city that is effective *and* cost effective.



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For a more complete description of the governance of Barangaroo refer to :

<https://resource.barangaroo.com/hc/en-us/articles/115009844687-Sustainability-in-Practice>

Of note is the vertical integration or transfer of commitment from government, to landowner and developer to tenant and the 'closing of the circle' by mandatory monitoring and report by external auditors.

Here is a diagram of the overall scheme and how it works.

4. Climate Positive rights and obligations

4.1 Climate Positive Initiatives

(a) Any Stakeholder may propose Climate Positive Initiatives for the BMP Committee to consider and develop. These would be in addition to the climate positive requirements imposed on:

- (i) the Tenants under their Leases; and
- (ii) the Developer's climate positive obligations under the PDA.

(b) The Stakeholders must co-operate with each other to procure that the BMP Committee considers, in good faith, any Climate Positive Initiatives which are proposed by Stakeholders and the manner in which they would be implemented if they are approved by a Special Resolution of the BMP Committee.

(c) All Stakeholders will co-operate with each other to procure the implementation of any Climate Positive initiatives which are duly approved by the BMP Committee.

(d) Each Tenant must use best endeavours to engage a waste operator who is willing to process and dispose of waste from the Tenant's Premises in accordance with such principles which most closely satisfy the Climate Positive Waste Principles.

(e) For the avoidance of doubt, the Authority and the Developer acknowledge and agree that the Developer's climate positive obligations under the PDA are separate from any obligations under this Plan and to the extent of any inconsistencies between the PDA and the requirements of this Plan in respect of the Developer's climate positive obligations, the provisions of the PDA prevail.

4.2 Carbon Neutral Instruments

(a) Each of the Leases requires the Tenant to either:

- (i) as it reasonably determines, from time to time, to address issues in relation to Climate Positive Initiatives for Barangaroo South;
- (ii) Nothing in section 4.3(a) requires the Stakeholder:
- (i) to provide information that has already been provided to the Authority or the Sustainable Building Management Committee under its Lease; or
- (ii) to provide any information that is subject to confidentiality restrictions or which is commercially sensitive; or
- (iii) to incur any substantial additional costs in complying the BMP Committee determination.

(b) buy and surrender to the Authority; or

(c) fund the Authority to buy;

(d) RECs and/or eligible Carbon Offsets sufficient to offset the carbon emissions from energy, transport and waste consumed within a Tenant's Premises, to the extent that these emissions exceed the benchmark rates for carbon emissions from energy and transport included in the relevant Lease. The acquisition of RECs and/or Carbon Offsets for these purposes, can be undertaken by a Tenant on its own account, by the Authority (or the delegate of the Authority, which must not be the BMP Committee).

(e) To the extent a Tenant, under its Lease, purchases and surrenders to the Authority RECs and/or Carbon Offsets, the Authority (or the delegate of the Authority, which must not be the BMP Committee) will, in satisfaction of the relevant part of a Tenant's obligation under its Lease, retire such RECs and/or Carbon Offsets as directed by that Tenant from time to time, to the extent the Tenant provides to the Authority sufficient RECs and/or Carbon Offsets for that purpose.

(f) To the extent a Tenant, under its Lease, funds the Authority to purchase and retire RECs and/or Carbon Offsets, the Authority (or the delegate of the Authority, which must not be the BMP Committee) will, in satisfaction of the relevant part of a Tenant's obligation under its Lease, acquire such RECs and/or Carbon Offsets as directed by that Tenant from time to time, to the extent the Tenant provides to the Authority sufficient funds for that purpose.

(g) The Authority (or the delegate of the Authority, which must not be the BMP Committee) will voluntarily retire any RECs and/or Carbon Offsets which it acquires in accordance with paragraph (b) or (c) and will provide details of the individual serial numbers associated with the RECs retired to the relevant Tenant.

(h) Without limiting any other provision of this Plan, the Authority agrees to apply such amounts as the Authority reasonably determines, in consultation with the BMP Committee, but not exceeding the Contribution Amount to help achieve the Climate Positive Initiatives by:

- (i) firstly, acquiring and voluntarily retiring such RECs and Carbon Offsets (where the price and quality of the RECs and Carbon Offsets is determined by the Authority) contributing towards the achievement of a Carbon Neutral outcome for the Barangaroo Project (after taking into account those RECs and/or Carbon Offsets that have been purchased and voluntarily retired as required by paragraphs (a), (b), (c) and (d));
- (ii) secondly, reimbursing the Developer for funding contributed in the previous year toward the purchase of RECs to meet the Developer's obligations under the PDA for that previous year, where the Authority has an express obligation to reimburse the Developer for such funding under the PDA;
- (iii) thirdly, supporting on-site initiatives to reduce carbon emissions in contribution to a Carbon Neutral outcome on-site; and
- (iv) fourthly, such other matters as the Authority, after consultation with the BMP Committee, determines.

<https://resource.barangaroo.com/hc/en-us/articles/115009844687-Sustainability-in-Practice>

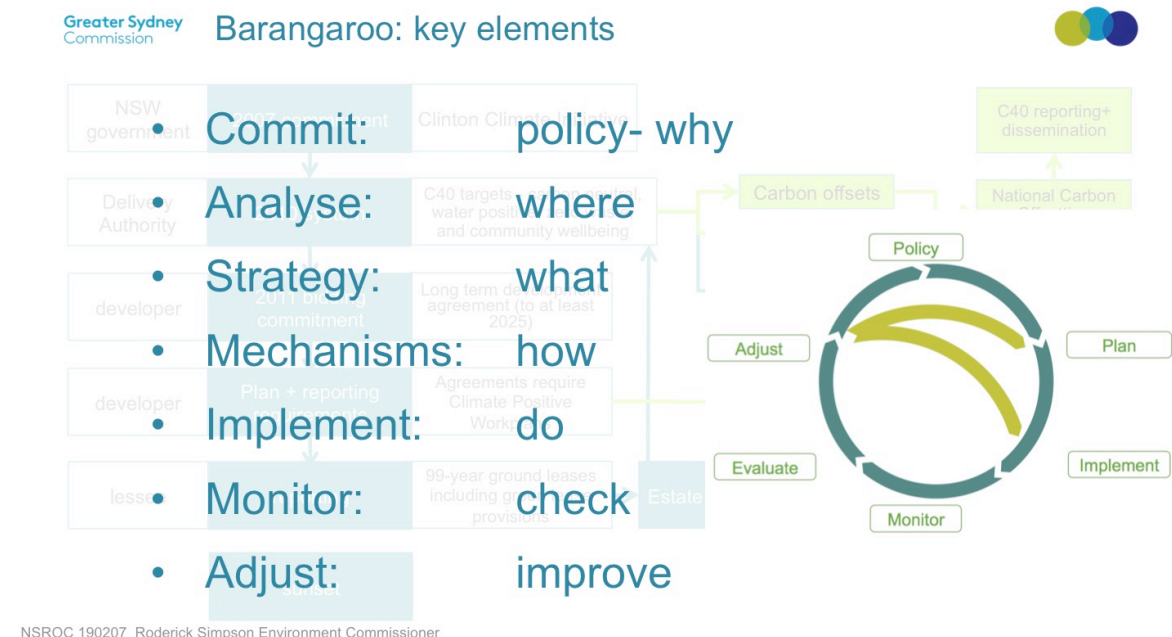
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<https://www.opengov.nsw.gov.au/download/15320>

Here are the detailed lease agreements- the governance mechanisms that tie it all together.

This arrangement is not directly transferrable to the mixed ownership that we have in our existing centres, but some of the arrangements may be able to be replicated and it does show what is possible- it is world class. As far as I know there is nowhere else that has such a strong governance framework and reporting commitment that achieves zero carbon.

Slide 10 Barangaroo key elements



Here is a simplified version of the essential elements, and if sounds familiar, really this is just another version of the cycle of continuous improvement- the basis for an adaptive management system- because that is the activity we are actually all engaged in- the adaptive management of the metropolis.

While the detailed design and management of precincts may vary, this framework and the steps are pretty universal. And the reason is that there is now a convergence of business investment interest and policy.

Simply, business wants to invest in projects that consider the risk of climate change and that are unlikely to become what is know as stranded assets.

And investors want to know how their investment is performing and tracking- in other words they require monitoring and reporting and will adjust their investment strategies accordingly.

You may be aware that NSW Treasury recently issued \$1.8 billion in 'green bonds' that will be subject to this kind of scrutiny, to investing projects with demonstrable environmental and social benefits.

<https://www.osii.nsw.gov.au/news/2018/11/15/green-bonds-mark-a-new-era/>



- Efficiency (BASIX NABERS etc)
- On-site (precinct) renewables
- Transport (including precinct parking)
- Water and waste
- Offsite renewables
- Carbon offsets

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These are the most common elements in a strategy for precinct planning that aims to reduced carbon emissions and reduced water consumption, better waste management. It is also important to recognise the direct relationship between parking policy –rates of provision and the type of construction- and energy consumption as well as the indirect role it has in relation to travel patterns and behaviour and transport demand management.



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What about local centres and places?

I will use the example of Crows Nest, although I know similar care and thinking has occurred in many places in the NSROC region.

It is a simple point really. North Sydney Council has planned and located car parks to support the main street of Willoughby Road, for many years. These car parks have integrated sports facilities, retail and even aged housing.

Slide 13 Crows Nest

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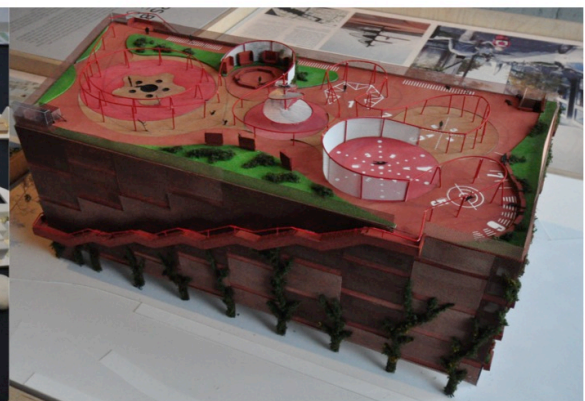
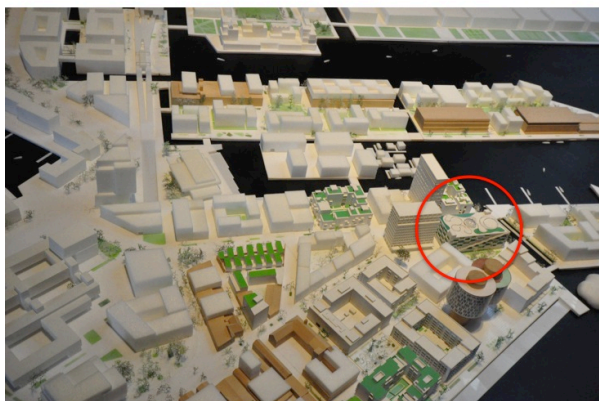


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So, nothing new on the one hand but important now to now look at how local government can not only make great places but contribute to environmental outcomes.

Slide 14 Copenhagen

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What about overseas?

Here is an urban renewal area in Copenhagen. What you see is a dedicated parking structure that is there at the beginning but could be redeveloped over time. In the meantime, it has a playground on the roof - sun is precious that far north.

Slide 15 Copenhagen



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Nordhavn: https://www.brookings.edu/wp-content/uploads/2017/05/csi_20170601_copenhagen_port_paper.pdf

The main point here though is that it is the whole precinct that is being planned and considered, not just how individual buildings perform - and where it makes sense to have shared facilities these have been part of the renewal process.

What about our big roofs - commuter and shopping car parks, industrial areas and public buildings. All of these can contribute to both the resilience of the area by providing distributed backup energy and also be integrated aesthetically into the place.

Slide 16 Embedded generation



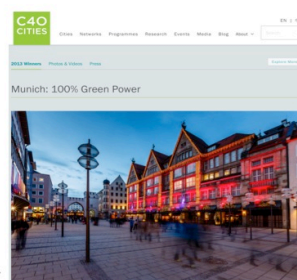
Figure 6. Robinsons Place Dumaguete, Manila. © ABS-CBN News 2018



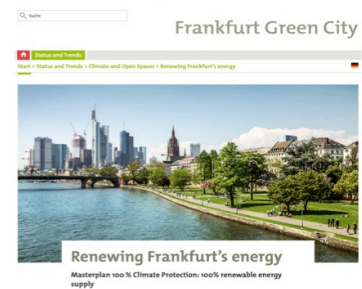
Figure 7. Veteran Freiburg Solar Settlement, Vauban, Germany. © plusenergiehaus.de 2012



Figure 8. Renovation of Halle Pajol by Jourda Architectes, Paris. © apur.org 2017



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Examples discussed in Droege: *The Renewable City*
<http://www.lowcarbonlivingcra.com.au/news/news-archive/2018/12/renewable-city-future-low-carbon-living>

The point I will make here is simply that all of these examples are within an overarching state or metropolitan strategy that has been interpreted and iterated down to the local level- this is our opportunity.

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INSIGHT BRIEF

August 2016

||||| HIGHLIGHTS

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- **Net zero energy developments can be life-cycle cost neutral** compared to business as usual and have lower first costs to parcel developers, all while creating communities that are more livable, healthy, comfortable, resilient, and environmentally sustainable.
- **Rocky Mountain Institute has developed a business model** for developing net zero energy or ultralow energy districts in a way that is attractive to the district developer, parcel developer, and tenants; creates a profitable business for an integrated energy services provider; and benefits the local electric grid and neighboring community.
- With a holistic viewpoint, **district-scale developments are uniquely positioned to be a major driver** of the next generation of high-performance buildings and an intelligent electric grid, and to benefit financially from such leadership.

Figure 1: The Path to Net Zero Energy

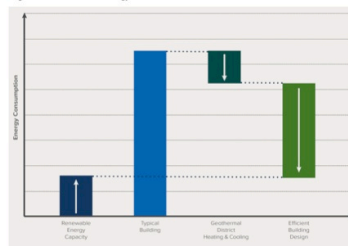
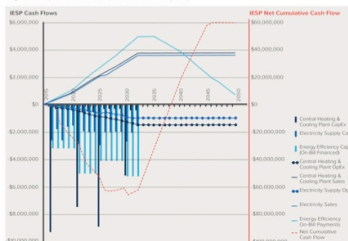


Figure 9: Sample IESP Cash Flows (For a Phased Development)



<https://rmi.org/report-release-integrative-business-model-net-zero-energy-districts/>

But there is still a long way to go.

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Conclusions:

- There is no easy fix, no single framework; will vary with assets, partners, governance, infrastructure capacity, resources, expertise
- What we do within the city is not the whole answer, but:
- We have to do as much as we can everywhere;
- There are links between liveability, transport energy & affordability;
- Adopting a 'precincts approach' in places of greatest change will take advantage of these links

The main focus today is liveability. But I have aimed to show that liveability, sustainability and resilience can and should be thought about together as we plan for local places.

Each place has a different potential- it is not a one size fits all approach, but we can track how we are travelling as a whole.

We can develop approaches that may not be directly transferrable from other places but learn from their governance arrangements and partnerships between the private sector and local government.

Perhaps most importantly, what I am suggesting is that it is local government that is well placed, perhaps best placed to have an ongoing curatorial and stewardship role to make liveable places that also have less environmental impact.
