SUBMISSION ON FOUNDATIONS FOR A STRONGER TOMORROW – STATE INFRASTRUCTURE STRATEGY

Infrastructure Western Australia
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Submission issued September 2021
WA State Infrastructure Strategy Submission

Australian Institute of Architects

ABOUT THE INSTITUTE

The Australian Institute of Architects (Institute) is the peak body for the architectural profession in Australia. It is an independent, national member organisation with around 12,000 members across Australia and overseas.

The Institute exists to advance the interests of members, their professional standards and contemporary practice, and expand and advocate the value of architects and architecture to the sustainable growth of our communities, economy and culture.
The Institute actively works to maintain and improve the quality of our built environment by promoting better, responsible and environmental design.

PURPOSE

- This submission is made by the Australian Institute of Architects (the Institute) in response to the Infrastructure Western Australia's State Foundations for a Stronger Tomorrow – State Infrastructure Strategy Infrastructure Strategy.
- At the time of this submission the National/Chapter President is Tony Giannone FRAIA.
- The Chief Executive Officer is Julia Cambage.

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1 INTRODUCTION

The Australian Institute of Architects (the Institute) is the peak body for the architectural profession in Australia, representing around 12,000 members. The Institute works to improve our built environment by promoting quality, responsible, sustainable design. Architecture influences all aspects of the built environment and brings together the arts, environmental awareness, sciences and technology.

By combining creative design with technical knowledge, architects create the physical environment in which people live, which in turn, influences quality of life. Through its members, the Institute plays a major role in shaping Australia's future.

Architects are a key component of Australia's $100 billion built environment sector and there are around 13,500 architectural businesses in Australia with about 40,000 employees. Approximately 25,000 people in the labour force hold architectural qualifications (Bachelor degree or higher) and architectural services in Australia in 2017-18 had revenue of $6.1 billion and generated $1.1 billion of profit[1]

Australian architects have a worldwide reputation for creative and innovative design leadership and Australia is known for producing contemporary and breakthrough architecture. We have a well-recognised, high quality and liveable built environment. To maintain this into the future and support our burgeoning population in both urban and regional centres, we must create buildings and public spaces that are environmentally, economically and socially sustainable and culturally rich.

The Institute, therefore, welcomes the opportunity to make a submission to this consultation on the Western Australia's State Infrastructure Strategy, *Foundations for a Stronger Tomorrow*.

This past twenty-one months has presented the challenge of the Covid-19 pandemic which has had different impacts across the world and between cities and regions across Australia. It has also seen the delivery of a Royal Commission into National Natural Disaster Arrangements.

To face these challenges and capitalise on lessons learnt, governments will require built environment design expertise and master planning to support development of effective and enduring solutions. These solutions include those delivered through Infrastructure Western Australia's State Infrastructure Strategy and the Commonwealth Smart Cities and City Deals programs.

Structure of this submission

The Institute responds, in this submission, to selected recommendations and/or sub-recommendations of the 361 recommendations and sub-recommendations of the strategy as they appear in the matrix of recommendations supplied to the Institute by IWA (and also set out in the response portal). These responses are built around seven higher level themes which accord to the section heading as follows:

2.1 First Nations co-creation of WA's infrastructure
2.2 Embed a total sustainability outlook.

[1] Industry Profile: Architectural Services in Australia, IBISWorld April 2019

2.3 Zero carbon energy,
2.4 Prevent and manage urban sprawl.
2.5 Leveraging Digital Transformation.
2.6 Smarter infrastructure development.
2.7 Address Western Australia's Affordable Housing Crisis.

The Institute has chosen to make this submission as a discrete submission to be uploaded via portal so that analysts within Infrastructure Western Australia and external stakeholders can read the Institute's response and position as a coherent whole. This submission can be publicly accessed at the INSTITUTE SUBMISSIONS link on the Australian Institute of Architects website.

Overarching positions on the draft (WA) State Infrastructure Strategy

The first overarching position made by the Australian Institute of Architects in relation to the *Foundations for a Stronger Tomorrow*, is that the strategy is generally supported.

Reasons for generally supporting the strategy include:

- Architects place a high value on achieving good outcomes through good design. Applying the same line of thought, good outcomes will be more likely to be achieved from Western Australia's infrastructure investments if infrastructure is designed and commissioned to a well-developed plan as against a piecemeal approach so that:
    - relationships between the various elements can be understood, appropriately sequenced and prioritised. There are often interdependencies between various elements of infrastructure.
    - there is a plan to hold government and its agencies to account.
    - future decisions on infrastructure relate back to the plan – not sectarian nor specific lobbied interests.
    - the investments to be made are costed financially, environmentally and socially and therefore a balanced approach is taken.
    - communities and society as a whole are included in the process.

- The strategy is comprehensive and has addressed two key important priorities of the Institute in relation to First Nations people and climate change and sustainability.
- The strategy has taken a wide-ranging scope across areas including justice, health and social housing which sometimes might not be in scope for the same consideration as more traditional considerations such as transport, energy, telecommunications and water infrastructure.

2 DETAILED RESPONSE TO THE ISSUES AND QUESTIONS

2.1 First Nations co-creation of WA's infrastructure

Members of the Australian Institute of Architects in the Western Australian Chapter encourage Infrastructure WA to acknowledge and value the strength of our First Nations people's knowledge system as it sets out to realise its 2042 vision. First Nations knowledge of caring for Country will add value to Western Australia's Infrastructure Strategy.

The Institute strongly supports all efforts and practical measures to realise co-creation by First Nations people and communities in WA's infrastructure. Comment here is provided in response to three of the draft Infrastructure Strategy recommendations.

IWA Recommendation 4: Develop and implement guidelines to engage with Traditional Owners and Custodians throughout the infrastructure lifecycle.

The National Standard of Competency for Architects[2] which is governed by the Architects Accreditation Council of Australia has just introduced the first First Nations competency standard of any built environment and construction profession or practitioner class in Australia. The Architects Accreditation Council of Australia developed the new First Nation competency standard in partnership with the Australian Institute of Architects' First Nations Advisory Working Group.

All builders, design professions and project managers should have a similar competency as it is now being increasingly recognised that designing and delivering projects in Country needs to be aware of the place in which the project is occurring and the custodians and communities with whom the proponents of a project might need to engage. It is noted that the NSW Government will incorporate a "Connecting with Country" element into the Design and Place State Environmental Planning Policy (SEPP) consequent to the recent review of this SEPP.

The Institute has just recommended to the Australian Building Codes Board in response to the ABCB's consultation on Continuing Professional Development on the National Construction Code (NCC) that CPD on First Nations and Sustainability should both be mandatory in the Australian construction sector.

Similar moves could be taken by Infrastructure Western Australia and the Western Australian Government to strengthen the First Nations co-creation of successful and enduring built environment outcomes. One opportunity to do so is when the new Australian Building Codes Board publication on Continuing Professional Development on the National Construction Code is finalised by the ABCB and agreed for adoption by the Building Ministers Meeting of the National Cabinet. This will establish a minimum requirement for mandatory annual CPD on the National Construction Code for all built environment practitioners including Architects, Building Surveyors, Builders and Project Managers.

Even if the Institute's recommendation is not adopted by the ABCB, the Western Australian Government could implement its own mandatory First Nations CPD requirement (e.g 2 hours per annum) over and above the minimum requirement of the hours proposed by the ABCB on the National Construction Code.

IWA Recommendation 6: Prioritise the Aboriginal Cultural Heritage Bill's passage through Parliament and implementation

The Institute strongly supports this recommendation. Reviewing heritage and First Nations cultural heritage controls (e.g Heritage Act 1975) ahead of commissioning Infrastructure is an important preparatory step and success factor for other recommendations which eventually lead to the commissioning of new infrastructure or upgrades and extensions of existing infrastructure. Clear controls, as per the Aboriginal Cultural Heritage Bill or other heritage legislation, can help ensure that these important steps commence well ahead in any infrastructure commissioning - especially to ensure appropriate participation, consultation and co-design. This will have two beneficial outcomes of:

- achieving good outcomes because the benefits of what the infrastructure is proposed to deliver have been balanced with the benefits of ensuring good stewardship and care of First

[2] https://www.aaca.org.au/national-standard-of-competency-for-architects/

Nations cultural heritage and places (as well as other heritage features that may be implicated).

- avoiding adverse financial impacts of any significant changes that are required as a result of the controls and decision on works or specific outlays (e,g land acquisitions for a specific infrastructure corridor).

The example of the Western Highway duplication in Victoria and the Djab Wurrung Birthing Trees as reported in the findings in 2020 by the Victorian Ombudsman[3] is a salient reminder of the need to have the Aboriginal Cultural Heritage Bill passed and achieve the Bill's purpose to establish a modern approach to protecting Aboriginal cultural heritage in Western Australia. A modern approach will reset the relationship between land users and Traditional Owners and transform how Aboriginal cultural heritage is identified, managed and conserved.

IWA Recommendation 7: Improve and increase participation and growth of Aboriginal businesses through the WA Aboriginal Procurement Policy.

The Institute strongly supports the recommendation. To support co-design and co-creation with First Nations people – Traditional Owners and Custodians - it is important to address longer term workforce strategies that actively involve First Nations people in infrastructure design. Practical measures include indigenous scholarships and living allowances to promote First Nations people, and especially those living in more remote communities, to train into relevant professions of architecture, engineering, planning, project management to develop infrastructure responses at various size and location of communities including capital and regional cities, towns and remote communities.

2.2 Embed a total sustainability outlook.

IWA Recommendation 11: Implement the State Government's policy for net zero emissions by 2050

The Institute strongly supports the intent of this recommendation and its sub-recommendations. IWA's 2042 vision has some commendable qualities. However, the Australian Institute of Architects proposes that the 2050 timeline for net-zero emissions is too late.

The Institute advocates a zero-carbon construction industry by 2030, twenty years earlier. Globally, our built environment accounts for 39% of all carbon emissions, with operational emissions accounting for 28%. The Institute recognises that its members, Architects, are positioned as major contributors to the problem of climate change - and therefor a potential major contributor to its solution as has the Word Green Building Council[4].

The Institute's Climate Action and Sustainability Taskforce (CAST) was formed in March 2020, following a national call for Expressions of Interest. At the same time, our nation emerged from the Black Summer fire season of 2019/2020, acutely aware of the climate crisis that is upon us. The

[3] See: https://www.ombudsman.vic.gov.au/our-impact/investigation-reports/investigation-into-the-planning-and-delivery-of-the-Western-highway-duplication-project/

[4] https://www.worldgbc.org/news-media/WorldGBC-embodied-carbon-report-published

emergency was then followed closely by a second complex disaster – Covid-19 – unfolding as a global system-scale crisis; also bound up in the consequences of unsustainable patterns of development[5].

The Australian Institute of Architects in November 2020 committed to achieving a zero-carbon construction industry by 2030. Members are actively committing to Carbon Neutral practices[6] and the Institute has also just achieved its own "Carbon Neutral" operations. The Institute has called on the Australian Government to establish a national plan towards zero carbon buildings by 2030 that can be supported and led, where appropriate, by state and local governments.

However, since the release by IWA of its draft Infrastructure Strategy, the International Panel on Climate Change (IPCC) has released its AR6 report which has been couched as a "code red for humanity". It states more clearly than ever, the need for an immediate and holistic campaign to reduce carbon emissions. 2050 is too late.

Of key interest is which agency would have ownership and the authority to co-ordinate action across all agencies and instrumentalities at state and local government levels as well as lobbying federal government.

In practical terms, the achievement of sustainable infrastructure development is dependent on a workforce that can deliver sustainable built environment outcomes including infrastructure.

Similar to the situation described above for First Nations competency, the 2021 National Standard of Competency for Architects has strengthened the competency standard for sustainability. The Institute has also just recently recommended to the Australian Building Codes Board in its consultation on Continuing Professional Development on the National Construction Code (NCC) that CPD on sustainability should both be mandatory in the Australian construction sector.

With regard to sustainability, Section J of NCC responds to the energy efficiency of buildings and the performance outcomes, and the Australian Building Codes Board (ABCB) is currently seeking comment on proposed amendments to energy efficiency and condensation technical provisions, for possible inclusion in National Construction Code (NCC) 2022.

We note that competency in sustainability should be extended beyond the final built outcome to also incorporate broader elements such as sustainably sourced materials and full building cycle. This includes waste disposal and recycling in relation to demolition outputs and new materials wastage (offcuts, packaging materials).

Similar to this submission's above recommendation on continuing professional development on First Nations, the Western Australian Government could implement a compulsory CPD requirement (e.g 2 hours per annum) for Sustainable practice in construction.

IWA Recommendation 13: Implement a state-wide approach for climate change adaptation for existing infrastructure.

It is commendable that IWA has drawn attention on page 83 of the draft Infrastructure Strategy that,

[5] Harvey, L. (2020). Covid-19 pandemic is 'fire drill' for effects of climate crisis, says UN official. The Guardian. Source: Covid-19 pandemic is 'fire drill' for effects of climate crisis, says UN official | Climate crisis | The Guardian

[6] https://www.architecture.com.au/about/carbonneutral

> *There is currently no whole of government sustainability framework that seeks to balance social, environment and economic objectives, policies and activities across government…*

However, it is also concerning that on page 83 of the draft Infrastructure Strategy it is reported that,

> *In developing this Strategy, IWA undertook a review of State agencies' and GTEs' strategies and Strategic Asset Plans. Most plans did not communicate that climate change mitigation and/or adaptation considerations had factored in infrastructure planning, project selection, design, or operation. The review concluded that some GTEs are considering climate change risks and adaptation measures, as well as being required to measure and report emissions under the National Greenhouse and Energy Report Scheme. However, most other State agencies did not appear to consider the impact of policies on emissions, measure emissions under their control or fully consider climate change impact risks and appropriate adaptation measures.*

We support the conclusion of the strategy (which in turn gives rise to Recommendation 13) that,

> *Considering the urgency of climate change action and the level of risk posed to State assets, it is necessary for all State agencies and GTEs to address actions in the WA Climate Policy and build capability and skills in this area as a matter of priority.*

However often, including here in the IWA draft Infrastructure Strategy, the economic or investment position is limited to shorter term financial modelling that justifies the cost of actions from a limited present fiscal standpoint.

An alternative financial modelling method needs to be used, based on much longer-range actuarial projections, when it comes to climate change and its environmental and social impacts, as well as direct impacts upon infrastructure. The timeline for the impacts brings long term costs which cannot be easily extrapolated from present day measurements.

This is because climate impacts on the environment (acknowledged in the draft Strategy) are due to "whole of life carbon" effects which are projected to occur over a very long timeframe of decades and centuries. The International Panel on Climate Change predict far longer timeframes,

> *many changes due to past and future greenhouse gas emissions are irreversible for centuries to millennia, especially changes in the ocean, ice sheets and global sea level.*[7]

Therefore 'triple bottom line' costing should be adopted in appraising whole of life economic impacts. That is the cost of action or inaction today, should be set against the cost of the destructive effects on infrastructure out to at least 50 or 100 years commissionable life, taking into account financial, social and environmental costs and returns.

Greater attention could also be given to modelling sea level rise. None of the strategy's 361 recommendations nor sub-recommendations address this specific and important risk.

[7] 2021. Headline Statements from the Summary for Policymakers. 9 August 2021. Sixth Assessment Report of Working Group 1 – The Physical Science Basis. Intergovernmental Panel on Climate Change.

Steffen et al's analysis[8] points out that failing to address the impacts of human activity on earth system over the next one to two decades could lead to a "hothouse earth" scenario with runaway impacts on warming, glacial melting, and sea level rise. As a result,

> *A Hothouse Earth trajectory would almost certainly flood deltaic environments, increase the risk of damage from coastal storms, and eliminate coral reefs (and all of the benefits that they provide for societies) by the end of this century or earlier* (p. 8256)

The recently released AR6 report of the International Panel on Climate Change notes in Chapter 12 (*Climate change information for regional impact and for risk assessment*) that Mentaschi et al. (2018)[9] reported a coastal area loss of 350 km2 over the period 1984-2018 having already occurred in Western Australia, as evidenced from satellite observations.

Therefore, it is imperative that the IWA Infrastructure Strategy recommends to the Western Australian government (or even Commonwealth) to undertake scientific modelling of potential sea rise under varying temperature increase scenarios and model the cost/economic impact on infrastructure. This will paint a truly holistic picture of "affordability". Completing a business-like analysis of risk in the way the insurance industry, for example, is now undertaking will change the framework for decision making. In the absence of this, the framework for decision making about "investing" in climate impact strategies may be insufficiently robust to ensure a future-proofed or climate-changed proofed infrastructure development for the longer-range future.

Taking a "clear and present danger" approach could also be the most prudent approach. This is similar to the same appraisal of risk and the actions that the Western Australian Government have taken to prevent second and third waves of Covid-19. Western Australians have benefitted by the Western Australian Government having a plan against all contingent outcomes. A strong and uncompromising defence strategy enables Western Australians to feel safe. The approach to Climate Change – mitigating its impacts and preventing and abating climate change - requires the same clear and present danger mindset to be applied.

Thinking globally, acting locally.

Finally, a reminder that on a per capita basis, Australia is one of the highest per capita CO_2 emitters in the world.

> *Australia's carbon footprint, including exports, surpasses China by a factor of 9, the US by a factor of 4 and India by a factor of 37.* [10]

Therefore, as well as being responsible for local risks, Western Australia (indeed, all of Australia) must demonstrate leadership to leverage the benefits for other countries.

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[8] Steffen, W., Rockström, J., Richardson, K., Lenton, T.M., Folke, C., Liverman, D., Summerhayes, C.P., Barnosky, A.D., Cornella, S.E., Crucifix, M., Donges, J.F., Fetzer, I., Lade, S.J., Scheffer, M., Winkelmann, R., and Schellnhuber, H.J. 2018. Trajectories of the Earth System in the Anthropocene. PNAS August 14, 2018 vol. 115 no. 33

[9] Mentaschi , L., Vousdoukas, M.I., Pekel, J-F., Voukouvalas, E. and Feyen, L. Global long-term observations of coastal erosion and accretion. *ci Rep* **8,** 12876 (2018). https://doi.org/10.1038/s41598-018-30904-w

[10] 2019. Evaluating the significance of Australia's global fossil fuel carbon footprint. July 2019. Climate Analytics. https://climateanalytics.org/media/australia_carbon_footprint_report_july2019.pdf

2.3 Zero carbon energy.

The Australian Institute of Architects does not support continued reliance on fossil fuel nor carbon emission producing bio-gases. As recently submitted by the Institute in response to the Victorian Government in its Gas Substitution Framework[11], the need for gas is recognised for certain high temperature processes. However, the goal should be rapid transition to hydrogen gas (created from renewable electricity sources).

We note as particular comment to Recommendation 41 (a) i,

> **achieving Government's net zero carbon emissions by 2050 aspiration through the lowest cost mix of generation, storage and network transmission and distribution;**

that there is a need to climate proof, build redundancy and appropriately scale energy infrastructure. Western Australia sits apart from the Eastern seaboard energy distribution grid. In Western Australia the 'poles and wires' of the grid are highly maintenance heavy. The vast regional areas of Western Australia highlight the important question of how to achieve energy reliability and equitably priced access for remote communities. Solutions would seem to sit with a focus on local/ small scale generation.

The 2042 Vision in *Foundations for a Stronger Tomorrow* states that,

> *Gas remains a component of the State's base energy system*. [12]

A critical element in de-carbonising the atmosphere is the removal of CO_2 producing fuels from energy/power generation. In the 2042 Vision, gas remains a component of the State's base-energy system. Gas should be phased out by 2030 in all non-industrial settings. The IPCC report makes it very clear that we cannot avoid catastrophic impacts from climate change with petrochemicals still in the mix. They need to be phased out now. This will not be easy but avoiding the issue due to the important part gas plays in our current economy will have even more expensive repercussions in years to come.

More emphasis could be achieved in the State Infrastructure Strategy on taking action to remove carbon from the economy and reduce the impact on the climate, in addition to mitigating the impacts of climate change.

It is inevitable that in the medium term, the pathway to zero carbon will involve the "off-setting" of residual carbon within systems after every measure has been undertaken to reduce emissions of carbon[13] . The offsetting of residual carbon is noted as per IWA Recommendation 12,

> **IWA Recommendation 12 Strengthen and expand WA Climate Policy programs to develop carbon farming and sequestration markets**

The Institute strongly supports this measure. Western Australia carbon sequestration projects can create economic value by providing locally produced carbon credits. These projects can also generate wider benefits including landscape regeneration, empowering Traditional Owners and Custodians, promoting biodiversity conservation and expanding existing industries (noting sub-recommendation

[11] https://www.architecture.com.au/wp-content/uploads/Australian-Institute-of-Architects-response-to-Victorias-Gas-Substitution-Roadmap_FINAL.pdf
[12] Table 1, p25 ibid
[13] Both CO_2 and CH_4 (methane)

12 (c) - *Supporting Aboriginal empowerment through land management and custodianship in carbon farming initiatives*).

Modelling should be undertaken to assess the potential size of this market, its potential for job creation and benefits for the economy through connecting the pathway to zero carbon alongside the economic development in the new market for carbon credits.

This would become an important proactive catalyst for reducing the climate impact risk to balance the risk mitigation planning mentioned so frequently in the infrastructure strategy.

The targets for reducing carbon rapidly should be set to enable the new carbon market and associated economic activity to evolve and mature.

A further practical strategy to de-gas Western Australia's economy from reliance upon CO_2 producing gases is to promote electrification. It may take still many years to refine or optimise hydrogen technologies and upgrade infrastructure. Electrification could play an important part in the solution over the short to medium term as it is capable of being implemented immediately.

There is a now large selection of electrification alternatives for appliances, for use in residential settings such as:

- induction cooktop versus gas cooktops,
- electrical heat pump versus gas or electric element hot water heaters. Heating water comprises approximately 25 percent of household energy use in Australia, or
- electrical hydronic heating that also utilise heat pump technology or more common reverse cycle (heat pump) air conditioning system.
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These above established technologies can, in turn, be powered from renewable electricity sources.

The Western Australian Energy Minister's announcement in December 2020 of the Government's $13 million Household Energy Efficiency Scheme (HEES) delivers a range of measures for households facing hardship. The HEES is an important platform to deliver a range of low-cost energy-saving options such as low-flow showerheads, draught sealing and lighting. However, it has the potential to be extended to provide subsidies for replacing major appliances such as hot water systems and heating appliances.

An electrification strategy could also include setting a planning requirement that no new buildings are built with gas plant or appliances. Exemptions could occur or on a specific show cause basis such as might be required for a hospital laundry or other plant. In these situations, a requirement could also be established that necessary gas plant and appliances must still be capable of retrofitting to enable future operation on hydrogen gas.

2.4 Prevent and manage urban sprawl.

IWA Recommendation 22. Prepare and implement an urban consolidation action plan.

The Institute strongly supports intent of this recommendation and its three sub-recommendations in relation to infill improvements and development.

Urban sprawl must be addressed in Perth and surrounds. Population density for the Perth "Significant Urban Area[14]" is 590 persons per sq km compared to 604 persons per sq km for Adelaide and 803 persons per sq km for Melbourne. The locations in Perth with the highest population density as at June 2020 were Perth City, and Scarborough in Perth's north-Western suburbs (both 3,500 people per sq km) and Tuart Hill - Joondanna (3,400 per sq km) in Perth's inner north. In comparison, inner-city Melbourne had a (density of 22,400 people per sq km and its nearby inner suburbs of Carlton had 14,100 persons per sq km and South Yarra – East, 10,100 persons per sq km.

Consulting firm, Allen Linklater has noted in a published online article[15] that,

> Densification supported by appropriate infrastructure and services should remain an essential feature of our strategic planning policies, to enable successful, high-amenity urban environments. The issue is how urban density should be planned and managed in a post COVID-19 landscape.

The Institute recommends that a key to the success of densification is to strengthen design. Good design has been a major shortcoming in WA with exampled of poor design including:

- Roadways with no pedestrian access
- Transport responses focussed on roads and flyovers reminiscent of 1960s American freeways
- The poorly landscaped airport link.
- The development on a cliff top site overlooking the Swan River, about which concerns were raised in 2019 by the Department of Biodiversity, Conservation and Attractions and Claremont Council about the development's potentially close proximity to a fire control area on the cliffs and breaching the State's bushfire planning policy[16].

Good design needs to focus on outcomes. This year, the Institute made submission[17] to the Australian Government Department of Infrastructure, Department of Infrastructure,Transport, Regional Development, and Communications about how to improve the measurement of outcomes by strengthening the National Cities Performance Framework indicators. We recommended to the DITRDC[18] that,

> *All new City Deals or Smart Cities partnerships and funding agreements must be linked, at the outset, to the achievement of outcomes that enhance sustainability and liveability as measured by a minimum of two sustainability indicators and two liveability indicators from the National Cities Performance Framework* (p.6)

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[14] Calculated from land area supplied in ABS Publication 1270.0.55.004 - Australian Statistical Geography Standard (ASGS): Volume 4 - Significant Urban Areas, Urban Centres and Localities, Section of State, July 2016 and population data as at June 30th 2020 supplied in Regional population, 2019-20 Released at 11.30am (Canberra time) 30 March 2021 - Table 1. Estimated resident population, Significant Urban Areas, Australia

[15] 2021. Macleod, T., Saw, P., Button J. In defence of densification published 11-2-21 https://www.allens.com.au/insights-news/insights/2021/02/in-defence-of-densification/#Footnotes

[16] https://www.perthnow.com.au/community-news/Western-suburbs-weekly/cliffhanger-decision-over-claremont-clifftop-apartments--c-1889509

[17] Australian Institute of Architects. Submission on National Cities Performance Framework. February 2021. https://www.architecture.com.au/wp-content/uploads/Australian-Institute-of-Architects-Submission-to-DITRDC-on-NCPF_FINAL_February_2021.pdf

[18] Also recommended in the Institute's 2021 Federal pre-budget submission.

Our submission also proposed to the DITRDC additional measures of sustainability,

> *The Institute strongly supports promoting the sustainability sub theme to a theme in its own right and including a broader range of indicators and data sources. These should include:*
> - *climate change, climate change events and impacts*
> - *vulnerability to wind, flooding drought, fire and heat exposure*
> - *vulnerability of cities including heat vulnerability and mitigation measures such as greening and cooling canopy, landscaping to reduce thermal mass, reflective surfaces*
> - *data available from Bureau of Metrology (BoM) national performance reporting validated data from the Low Carbon Living Cooperative Research Centres[19]*
> - *202020 vision indicators of green space in our cities, including canopy cover, that reflect how both private and public space in our cities are changing[20].*
> - *better built environment indicators Nationwide House Energy Rating Scheme (NatHERS) and Green Building Council of Australia's Green Star. (p 7)*

Further to this, the submission noted the inadequacy of the NCPF Liveability indicators and suggestions were proposed (which are summarised in the next part of this response below in relation to affordable housing.

The Institute notes that the recent WA Apartment Design Guidelines will improve quality of apartments with respect to densification. However, there is a need to couple these with non-bricks and mortar strategies to get good social returns out of assets. Addressing urban design and urban sprawl is not just a question of the 'hardware' but also the 'software'- that addresses creation of community.

Architects have a role in 'place making' – designing spaces to help communities become engaged with and interact with the 'hardware'. Good design is therefore a key to addressing urban sprawl and achieving good outcomes in urban infill settings.

Examples include activation of 'dead areas' and voids which might usually be prone to vandalism or antisocial behaviour. Examples of such activation include community gardens and markets and recreation spaces in the voids beneath elevated rail-line. Good outcomes are achieved through designed-in activation features as well as the community participation work undertaken afterwards by local government, non-government organisations and neighbourhood community groups.

The integration of public and active transport into urban development is also an important success factor for containing urban sprawl and enhancing liveability (e.g paired with concepts such as the 20 minute neighbourhood. To date, the development of WA public transport / METRONET has seen infrastructure development across the state, in a model of Transit Oriented Development (TOD). TOD does certainly deliver dividends and successful TOD is often linked to a decrease in car use.

However, the ability to practically access public transit for many is still challenging and the current transport network remains inadequate to meet people's actual everyday travel needs. This is because, the focus on the CBD as the main public transport destination ignores the possible future of employment being more diffuse, and not requiring a static city location for residence or main transit. It misses the opportunity to couple densification with transport.

[19] http://www.lowcarbonlivingcrc.com.au/

[20] https://202020vision.com.au/media/41955/202020visionplan.pdf

In applying principles of Development Oriented Transport, value could be added through creation of hubs – place-based development not just transport hubs, but activity centres where there are residential, commercial, community, retail and services activations. Stations would enhance the centres and not just exist as a standalone piece of transport infrastructure.

A shift to a decentralised and diffuse transport network that reflects the future trends of employment and living as well as current real-life needs of potential users and residents in the transport hub precincts represents an important success factor in in-fill development and any further greenfields or brownfields development along public transport routes.

A further question about how to address sprawl is whether attention should be paid to growing satellite or secondary major cities. Therefore capital city planning and regional development are closely related issues.

Regional development could provide the opportunity to grow small regional centres instead of continuous urban sprawl. However this needs to be accompanied by a comprehensive appraisal and long range strategy. There are major economic and social risks where the economies of secondary or regional cities are solely underpinned by one or two major outputs with resultant 'boom-bust' cycle and 'rust belt' scenarios when the output, or its market dissipates . With careful consideration of these risks, locations such as the Pilbara might be considered for the feasible and sustainable development of an economically, environmentally and socially sustainable secondary city over the longer term with a basis in steel and the hydrogen economies.

2.5 Leveraging Digital Transformation.

The Institute strongly supports and comments to the following recommendations and their sub recommendations:.

IWA Recommendation 1: Elevate WA's focus on accelerating digital transformation and connectivity infrastructure.
IWA Recommendation 2: Take a digital-first approach to all aspects of the infrastructure lifecycle.
Recommendation 20: Develop a single digital government approvals system.

We lend strong support to implementing sub-recommendation 2.1 (b), (c) and (d) as a matter of priority. Recent lockdowns have already demonstrated how the broadband network was strained in some locations (e.g. Bunbury). We note that this is an issue for the Western Australian Government to address with the Commonwealth Government and the Australian Government's NBN agency, NBNCo

The Institute notes its very strong support for sub-recommendation 2.2 (a), (b) and (c). Building Information Modelling (BIM), which is referred to on pages 53, 60, 61 and 123 of the draft Infrastructure Strategy, could play a very important role to support total lifespan management of infrastructure assets in order to gain the best dividends financially, societally and environmentally. However, we note that Building Information Modelling (BIM) is currently only used in some larger projects such as public hospitals and could otherwise be used in a much broader range of building typologies as well as other infrastructure assets. It is also important that government data sets are linked.

The Australian Institute of Architects holds important knowledge assets in BIM in its repository of Acumen Practice Notes[21]

See: https://acumen.architecture.com.au/globalassets/asset-import/files/environment-notes/edg_90_rm_edited1.pdf
https://acumen.architecture.com.au/project/bim---building-information-modelling/

The Institute strongly supports sub-recommendations 20 a. and band its two sub-recommendations,

a. **Providing a single access platform to standardised information.**
b. **Delivering staged platform upgrades to create a single lodgement portal.**

In Western Australia there is currently reasonably good use across local government and relevant planning and building authorities of electronic documentation lodgement.

In relation to planning and building approvals, BIM could also be used to support post-occupancy evaluation including input from the public. In this way a continuous improvement model could be developed for Infrastructure assets. In such a continuous improvement model the post-occupancy data would be reviewed/ oversighted by Design Review Panels.

2.6 Smarter infrastructure development.

The Institute notes the prudent approach adopted in *Foundations for a Stronger Tomorrow* of carefully understanding demand and maximising the benefits of existing infrastructure especially as put in Recommendation 23:

IWA Recommendation 23. Embed rigorous infrastructure appraisal in the planning decision-making framework to ensure the infrastructure servicing and operational burden placed on the State informs decisions.

The Institute recommends that such appraisals give consideration to:

- upgrading out of date infrastructure ahead of further urban development on the fringes or infill developments. This is recommended as existing infrastructure cannot cope. For example, in some locations, an apartment building may require a $250,000 installation of water pumps to compensate for inadequate water pressure – adding to the cost of intended affordable housing.
- carefully considering the justification and business case for seemingly disproportionate investments in some infrastructure such as a costly major arterial road to a single small-isolated residential subdivision.
- equitable sharing of costs of infrastructure be shared equitably through:
    - development levies,
    - shared infrastructure between private developments (e.g. water pumps)
    - developers on urban fringe paying head costs

[21] E.g see: https://acumen.architecture.com.au/globalassets/asset-import/files/environment-notes/edg_90_rm_edited1.pdf and https://acumen.architecture.com.au/project/bim---building-information-modelling/

- strategies including protocols and process improvements to promote sensible coordination and communication between IWA and other authorities
- ensuring that procurement processes are fit for purpose. The Institute notes the prevalent and increasing trend towards novated design and construct (D&C) procurement. There can be benefits to governments and their agencies of novated D&C procurement such as earlier determination of the total cost of construction. However, this benefit can be adversely undermined if the design intent is not realised. Good design features risk being 'value managed' out of projects by contractors seeking to reduce costs and maximise project returns. Therefore, government authorities and taxpayers may not receive what they had expected.

The Institute also endorses the opportunity that Foundations for a Stronger Tomorrow has identified in (sub)-recommendation 38 (a) to recycle assets, .

> **IWA Recommendation 38. Review the potential for private sector funding for the delivery of infrastructure by,**
>
> **a. Investigating asset recycling through divesting suitable assets.**

Consistent with this approach is asset recycling and adaptive re-use of older buildings. Existing building assets should be adapted/ re-used to extend commissionable life or bring new use to a retired asset. A further example of this is discussed in the next section on affordable housing.

We also note here with regard to adaptive re-use that greater consideration be given to heritage values. An example is the Freemantle Traffic Bridge over the Derbal Yerrigan (Swan River) between Fremantle and North. At present, the recently published design brief[22] advises that a new rail bridge and a new traffic bridge are to be built between the existing rail bridge. The existing WA State Heritage listed bridge[23] is to be demolished with a possibility, only, of retaining a small portion.

This almost century-old structure is an iconic reminder of Freemantle's history and of important cultural significance. It should not be demolished. It could be retained and adaptively re-used for recreation and tourism purposes.

As part of an asset recycling strategy, it would make good sense to cease automatic demolition of retired infrastructure assets as the default setting when infrastructure is decommissioned from its primary purpose. Instead, a sound rationale should have to be put forward for the demolition of historic structures whether they have heritage listing or otherwise.

2.7 Address Western Australia's Affordable Housing Crisis.

The following recommendations are strongly supported and in need of urgent response

IWA Recommendation 68. Improve planning for social and affordable housing

IWA Recommendation 69. Prioritise further investment in social and affordable housing

[22] https://www.mainroads.wa.gov.au/globalassets/projects-initiatives/projects/metro/swan-river-crossings/swan-river-crossings-design-inspiration-08_21.pdf
[23] http://inherit.stateheritage.wa.gov.au/Public/Inventory/PrintSingleRecord/f37d2c6e-9820-4f76-bfac-e532e3955152

The Western Australian government's private public partnership in social housing is not working well. Better value could be obtained for what is spent. The Western Australian Chapter of the Institute advocates Shelter WA's clever initiative[24] to utilise un-used or under-used Western Australian Government assets to deliver housing outcomes for people experiencing or at risk of homelessness (see sidebar).

An affordable housing response encompasses both social housing and private sector supply. There is an important role for the private market in delivering affordable housing as the major proportion of housing is constructed by private development. However, balanced regulation is needed to achieve affordability, reduce urban sprawl and ensure housing and development which reduces carbon emissions and mitigates climate change impacts. For example, regulated measures could be adopted in both urban and suburban situations of infill, brownfields or greenfields developments in respect of master planning and building design to ensure:

- deep tree planting, even for apartments, to create cooling and carbon-sinking tree canopy,
- infrastructure to encourage active transport including pedestrian and cycle-ways, traffic-calming measures and large scale secure bike parking with e-bike charge points in retail, commercial and transport hubs in both the Perth surrounds and regional cities and towns,
- use of high permeability concrete to reduce the stormwater runoff in urban areas and promote water penetration into the water table. This has clear benefits for designing and commission storm water and drainage infrastructure,
- high reflectance roofing materials to keep buildings cooler,
- kerbside charge points for electric vehicles in higher density locations, and
- set aside secure parking for self-service car share schemes to encourage reduced need for two or three car households.

From a standpoint of affordability these measures will help reduce long-term costs to householders through reduced energy consumption (including from increased use of active transport and decreased reliance on cars).

Use of incentives such as inclusive zoning and tradeable social credits need to be adopted on a more widespread basis to ensure that social housing responses are distributed across all communities not just concentrated in traditional 'lower socio-economic' precincts.

Shelter WA's charette to end homelessness

In August this year, Shelter WA held a 'charette' to bring together homelessness, social housing, architectural, planning and finance and economics experts ahead of Homelessness Week. Shelter WA identified 30 government owned land and buildings for sale that could be used towards solving the affordable housing shortage in Western Australia.

Ten architectural design teams were joined by a representative from a community housing provider to assist the development of designs during the session.

Seven sites were available to the design teams to choose from across the Perth metropolitan areas and regional WA cities.

Designs developed in the charette were presented to a review group. This workshop between architectural designers and housing providers highlighted how innovative design led solutions can deliver more social housing across identified sites. The outcomes report from the cherette will outline a series of key recommendations to be considered by the state government to increase housing supply and to advocate for the ending of homelessness in WA.

[24] Charette: Housing solutions to end homelessness. https://www.shelterwa.org.au/charette-housing-solutions-to-end-homelessness/

As mentioned previously, the Institute submitted recommendations this year to the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications in its review of the National Cities Performance Framework performance indicators.

We noted to the DITRDC that liveability is insufficiently represented in the Nation Cities Performance Framework and what appeared absent were "Inclusion and Health Indicators". Inclusion involves both social and economic inclusion.

The Institute recommended, as it does here to Infrastructure Western Australia, to include as part of measures of liveability, measures of accessibility of our cities (and regional centres) for people living with disabilities. These could include measures of adaptability of housing using standards such as the Liveable Housing Australia Standards[25].

Furthermore, access to premises, in addition to residential buildings, could be measured using the Australian Network on Disability's Access and Inclusion Index which includes is a quick organisation self-appraisal of premises access amongst a suite of organisation accessibility measures[26].

While it is assumed that new buildings and major upgrades are required to meet the compliance requirements of the National Construction Code through datasets of relevant building planning approvals, inspections and certifications, it is more difficult to ascertain the degree to which existing building stock complies. Older buildings may not have undergone major upgrades work nor have been retrofitted for *all-abilities*[27] access.

Other liveability measures that could be included when Infrastructure Western Australia and the Western Australian Government are considering social housing, affordable housing and urban infill development to counteract sprawl are measures of play friendly places - inclusive, integrated spaces that allow for play in the urban environment. It is important to consider children in our cities as they are our nation's future. Play spaces can promote health, reduce crime, and increasing learning outcomes. Play is not just about 'playgrounds' but also promoting opportunities for play through traffic calming, and inherent design features built into parks and public spaces such as water features play spaces and grassy knolls for children to roll down (Jonathon, 2016[28]).

Of particular note is the work of Jackson (2016)[29] in Australia in reviewing twelve international urban rating tools developed to assist with the regeneration of existing and new sustainable communities and cities, particularly those supported for use in Australia (i.e. where training and support are locally provided). The tools include design guidelines, calculation tools, assessment tools and rating systems, with some tools comprising more than one of these formats. As they are international tools, they also lend themselves to the opportunity of International Benchmarking.

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[25] http://www.livablehousingaustralia.org.au/

[26] https://accessandinclusionindex.com.au/quick-assessment/question/274/

[27] Or 'disabilities', though 'all- abilities' is the more inclusive term.

[28] Donovan, J. 2016. Enabling Play Friendly Places. Environment Design Guide EDG 87 JD August 2016 Australian Institute of Architects. Sourced from: Australian Institute of Architects Acumen Practice Notes https://acumen.architecture.com.au/globalassets/asset-import/files/environment-notes/edg_87_jd.pdf

[29] Jackson, S. 2016. A summary of urban assessment tools for application in Australia. Environment Design Guide. EDG 84 SJ • February 2016. Australian Institute of Architects. Sourced from: https://acumen.architecture.com.au/globalassets/asset-import/files/environment-notes/edg_84_sj.pdf