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State Infrastructure Strategy – Cross sector advice on Climate Change and Sustainability

FINAL REPORT

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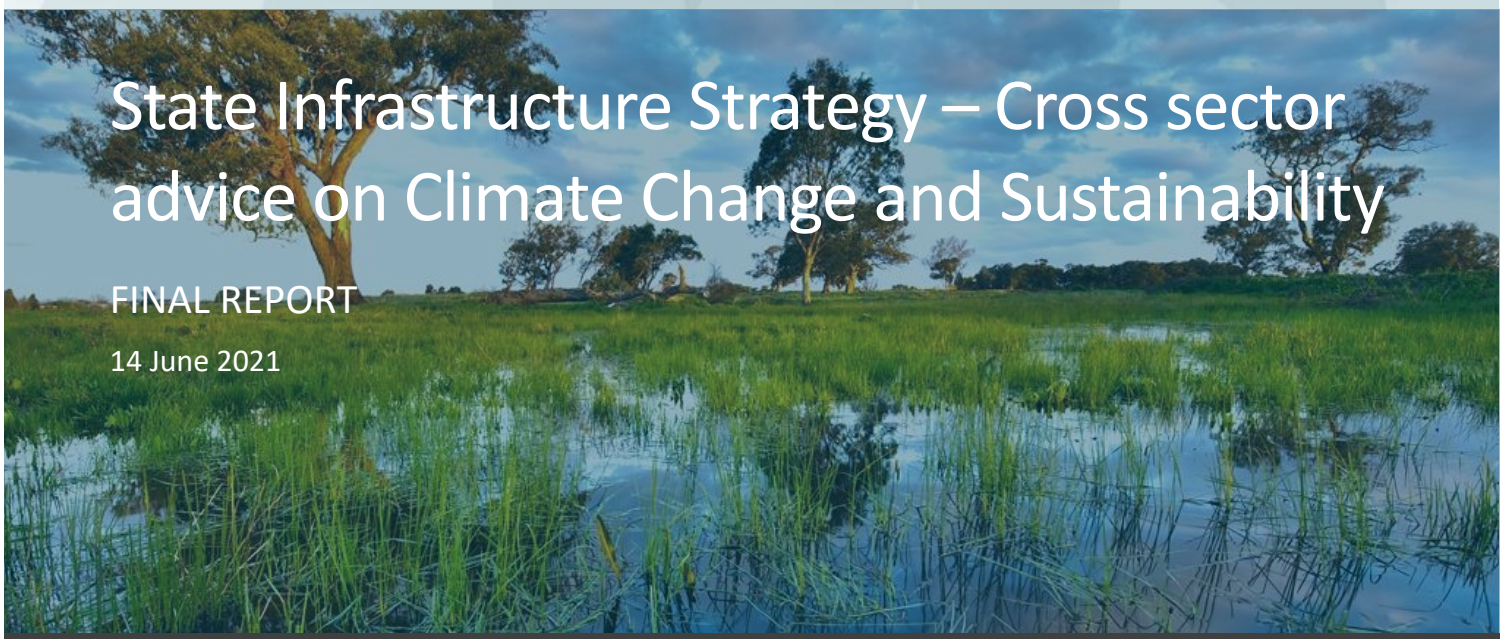

A Marsden Jacob Report

Prepared for Infrastructure WA

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Acronyms and abbreviations

AAP	Adaptation Action Plan
ACT	Australian Capital Territory
BOM	Bureau of Meteorology
COAG	Council of Australian Government
CSIRO	Commonwealth Scientific Industry Research Organisation
DPC	Department of Premier and Cabinet
DPIE	Department of Planning, Industry and Environment (New South Wales)
DPTI	Department for Infrastructure and Transport (South Australia)
DTF	Department of Treasury and Finance (Western Australia)
DWER	Department of Water and Environmental Regulation
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Authority (Western Australia unless otherwise stated)
ESG	Environmental, Social, and Governance
EV	Electric Vehicle
GBCA	Green Building Council of Australia
GHG	Greenhouse Gas
GRESB	Global Real Estate Sustainability Benchmark
GRI	Global Reporting Initiative
GTEs	Government Trading Enterprises
IAAF	Infrastructure Australia Analytical Framework
INSW	Infrastructure New South Wales
ISAAF	Infrastructure South Australia Assurance Framework
ISCA	Infrastructure Sustainability Council of Australia
ISO	International Organization for Standardization
IWA	Infrastructure Western Australia
NABERS	National Australian Built Environment Rating System
NARClim	NSW and ACT Regional Climate Modelling
Nathers	Nationwide House Energy Rating Scheme
NCC	National Construction Code
NSW	New South Wales
ODASA	Office for Design and Architecture South Australia
PTA	Public Transport Authority of Western Australia
Qld	Queensland
SA	South Australia
SAMF	Strategic Asset Management Framework
SIS	State Infrastructure Strategy
TAFE	Technical and Further Education
TCFD	Taskforce on Climate-Related Financial Disclosures
TPP	Treasury Policy Paper (NSW)
WA	Western Australia

Executive summary and recommendations

Infrastructure Western Australia (IWA) was established in 2019 to drive change and reform how the State of Western Australia plans and delivers infrastructure. One of IWA's key projects is the preparation of the State Infrastructure Strategy (SIS) – which is due to be released in mid-2021 for public consultation.

The SIS will set out WA's infrastructure needs and priorities over the next 20 years and will cover both physical infrastructure and "non-built" solutions (e.g. policy, regulatory, governance, etc.).

Marsden Jacob Associates was commissioned by IWA to provide sustainability and climate change advisory services to support the preparation of Western Australia's first 20-year State Infrastructure Strategy.

Part 1: Climate change policy

Western Australia's Climate Policies

Western Australia's Climate Policy, in line with other states and territories, outlines a commitment to achieve net zero greenhouse gas emissions by 2050 (noting that South Australia has an aim of 2045).

Western Australian Climate Policy

Mitigation strategies

The Western Australian Climate Policy currently provides limited detail to support the strategy at the sectoral level. A sectoral level greenhouse gas emissions reduction strategy is therefore required.

It appears likely that the SIS will be finalised before the Net Zero Transition Plans or the Sectoral Emissions Reduction Strategies are finalised. Prior to these plans being finalised there is limited detail on how the aspiration of net zero emissions will be realised while, at the same time, meeting the requirements of the SIS.

This current shortcoming in detail on emission reduction is important because the application of the SIS could have significant implications for WA's medium term and long-term emission trajectories. It is therefore essential that development of the SIS is consistent with the net zero emissions objective - overall and across each of the ten infrastructure sectors. The Western Australian Climate Policy points to priority areas including manufacturing, energy, transport, landscapes and soils and cities. There is a strong correlation between these areas and the 10 priority sectors covered by the SIS. Further analysis is required, however, as part of Sectoral Emission Reduction Strategies development, to identify priority emission reduction sectors and to map out emission reduction pathways for those sectors.

Adaptation strategies

There is also currently limited information on which sectors and infrastructure in WA are particularly vulnerable to climate change and how the vulnerability of those sectors and infrastructure can be

reduced and their adaptive capacity enhanced. Again, this current shortcoming is important in the context of the SIS to ensure that infrastructure is developed in a way that reduces its vulnerability to climate change. Preliminary assessment indicates the sectors most vulnerable to the impacts of climate change include many of the 10 priority SIS sectors including social and affordable housing, health and water. Substantial additional analysis is required however, to identify the sectors and infrastructure most vulnerable to climate change, and to develop adaptation strategies for those sectors.

Greenhouse Gas Emissions Policy for Major Projects and the Environmental Factor Guideline, Greenhouse Gas Emissions

The *Greenhouse Gas Emissions Policy for Major Projects* and the *Environmental Factor Guideline*, *Greenhouse Gas Emissions*, set greenhouse gas emission objectives against which individual infrastructure projects can be assessed. However, changes are required to both the Policy and the Guideline to remove ambiguity as to whether all major emitters are required to set emissions reduction targets and to ensure that the Greenhouse Gas Management Plans of proponents cover both Scope 1 and Scope 2 emissions.

Impact of WA's climate change policies on the ten infrastructure sectors

Assessment of each impacted sector across the range of government influence

The capacity to mitigate greenhouse gas emissions varies significantly between the ten priority infrastructure sectors. Similarly, the requirement for climate change adaptation is more important for some sectors than for others.

Some government agencies and GTEs have already undertaken an evaluation of climate risks to their operations (for example the PTA's review of vulnerability and Department of Planning, Lands and Heritage's coastal assessment strategy). However, published policies and strategies are currently sparse - particularly in the climate change adaptation space.

Sectors identified in the SIS

It is noted that the sectoral definitions vary in breadth. In particular *Social and affordable housing* is narrowly defined. This narrow definition currently leaves some key related areas, such as urban land use planning and the regulation of building energy efficiency, without effective coverage in terms of climate change adaptation and greenhouse gas mitigation.

IWA should therefore consider broadening the *Social and affordable housing* sector to also cover building energy efficiency and land use planning.

Similarly, the agriculture sector does not currently "belong" in any of the ten priority infrastructure sectors, leaving a significant potential gap in terms of climate change adaptation and greenhouse gas mitigation.

Comparison of climate change policies with the other states and territories

All states and territories have an emissions reduction objective (typically net zero emissions by 2050). Only three jurisdictions (ACT, South Australia and Victoria) have legislated this objective however and have a requirement for mandatory reporting against the targets – making the process more transparent as to each jurisdiction's progress. Funding shortfalls and gaps within the stated actions remain an issue for all jurisdictions.

Victoria is the only State to have implemented a comprehensive adaptation plan. Victoria's plan is legislated, supported by climate projections, identifies priority sectors and establishes measures to be implemented. Some other jurisdictions are currently establishing climate change projections and developing comprehensive adaptation plans (ACT, NSW, Queensland and South Australia).

Victoria should currently be seen as the 'gold standard' for adaptation policies and, along with the ACT and NSW, for mitigation policies. While other states are lagging, especially on climate change adaption, Western Australia is furthest behind – as no detailed plans are currently in place for either sectorial emissions mitigation or adaptation. To the limited extent that Western Australia does have plans in place, it is unclear as to how these will be resourced going forward, both in terms of the skill sets required within government agencies and the funding required to carry out mitigation and adaptation measures.

Recommendations

Greenhouse gas emissions reduction recommendations

There were four recommendations arising from this work in relation to greenhouse gas reduction.

Recommendation 1 – Emissions reduction strategy
The Government should develop an emissions reduction strategy for Western Australia. The strategy should detail how the government intends to achieve zero net emissions for Western Australia focussing on priority sectors, including many of the sectors covered by the SIS. The strategy should include/ be supported by:

- a legislated emissions reduction objective
- interim emission reduction targets and timelines
- a requirement for annual reporting against the targets
- a detailed baseline emissions inventory and emissions projections.

Noting the importance of priority infrastructure sectors to achieving the whole of state objective and targets, sectoral strategies should, as a minimum, include a detailed emissions baseline and projections and emission reduction targets and timelines.

Recommendation 2 – Government actions
The emissions reduction strategy should also detail a comprehensive suite of actions aimed at achieving the emissions reduction objective and interim targets and cover the full range of interventions in priority sectors. In broad terms, emission reductions are likely to come from

increased use of renewable energy, increased energy efficiency, other carbon mitigation measures (where applicable) and carbon sequestration and offsets (where emission mitigation is not feasible or cost effective). Interventions will include:

- Standards and regulations
- Rebates and incentives
- Consumer education such as through mandatory disclosure of efficiency
- Preferred purchasing (e.g. carbon neutral) for government projects and programs

Recommendation 3 – Infrastructure assessment and approval
The Greenhouse Gas Emissions Policy for Major Projects should be amended to ensure that all major emitters assessed under the Environmental Protection Act 1986 are required to set emissions reduction targets and outline their contribution to the State's net zero aspiration. The Environmental Factor Guideline should be amended to ensure that the Greenhouse Gas Management Plans of proponents include targets, strategies and intended reductions covering both Scope 1 and Scope 2 emissions over the life of the project. The Government should ensure that approval of all major infrastructure projects (government and non-government) subject to them meeting the Policy and Guideline.

Recommendation 4 – Legislated emission reduction targets Net Zero Transition Plans
The Government should proceed with its commitment, as outlined in the Western Australian Climate Policy, to require government agencies and government trading enterprises (GTEs) to develop net zero emission transition plans for their operations. Agencies and GTEs should be accountable for achieving the transition plans, with progress against the plans being reported in the Annual Report and audited by the Office of the Auditor General.

Climate change adaptation recommendations

Marsden Jacob made three recommendations, as follows, in relation to climate change adaptation.

Recommendation 1 – Legislated adaptation planning
The Government should enshrine effective climate change adaptation planning in legislation, including a requirement to develop and fund a comprehensive adaptation plan. A suitable department (e.g. DWER or DPC) should co-ordinate development of the plan and periodic reviews (e.g. every five years), consistent with the latest climate change science and state and regional climate change projections (see Recommendation 3).

Recommendation 2 – Sectoral and infrastructure adaptation plans
As part of developing an adaptation plan, the Government should undertake or commission further assessment to identify the most vulnerable sectors to climate change and to prioritise them for adaptation planning.

Adaptation plans for the priority sectors should be undertaken by the relevant agency or department and co-ordinated by the co-ordinating Department.

The sectoral emissions reduction strategies should include actions relating to infrastructure planning and development. The Government should ensure that infrastructure approvals processes are consistent with the sectoral emissions reduction strategies.

Recommendation 3 – Climate change data

The Western Australian Climate Policy commits the Government to funding regional climate change projections, downscaled to higher spatial resolution, for priority regions in Western Australia including the north-west. The Government should consider extending that work to cover all regions in Western Australia. Prior to commissioning a recognised climate change modelling organisation (e.g. CSIRO, NARCliM) to developing projections, the Government should consider engaging a suitable specialist in climate science communications to research best practice in developing, presenting and using climate change projections. The purpose of the research will be to ensure that projections are fit for purpose in infrastructure, policy and other decision-making.

Part 2: Infrastructure Sustainability

Sustainability is commonly defined as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. A Triple Bottom Line assessment has historically been the standard approach to measuring sustainability, however the definition and assessment is evolving and will continue to evolve as our understanding develops.

A thorough process to ensuring sustainability is a key part of infrastructure planning should be undertaken at three different phases of the project:

- Shortlisting and selecting projects on a Triple Bottom Line basis
- Managing and minimising environmental and social impacts of selected infrastructure
- Reviewing implemented projects to ensure outcomes meet objectives.

Findings

Our review of infrastructure sustainability and related frameworks in jurisdictions across Australia, including Western Australia found that:

- Queensland has integrated sustainability most explicitly into its analytical framework. They are the only state to build a separate sustainability assessment into the business case process that goes beyond direct social and environmental costs and benefits of a project and expands into a broader definition of sustainability with considerations of heritage and culture, employment and governance, amongst others. However, only high value projects are required to undertake this assessment.
- Most states have clear guidelines and tools for managing and minimising the impact of infrastructure with respect to the environment, but this does not extend to other key sustainability themes such as social and cultural sustainability. This is the same for sector-based guidelines applied in some sectors such as transport, health and education.
- The Infrastructure Sustainability Council of Australia has produced sustainability rating tools that are

incorporated into state specific sector reporting requirements, or in the overall assessment framework in the case of Queensland. The tool is applied in Western Australia's Transport Portfolio.

While we have not undertaken a complete review of Sustainability tools used in other countries, it is our view that a consistent approach to reporting and assessment is good practice. While the ISCA tool may have limitations, it is the best tool available to the WA Government at present and is the tool which appears most likely to feature in future Federal based assessment frameworks.

Recommendations on infrastructure sustainability assessment and reporting

As a result of this review, we have two recommendations on improving infrastructure sustainability practices:

Recommendation 1 – Sustainability assessment of infrastructure projects
The Government should look at incorporating sustainability assessment into its infrastructure project assessment framework covering:

- shortlisting of projects and project selection;
- managing and minimising environmental and social impacts of selected projects; and
- review of implemented projects to ensure outcomes meet objectives.

The (Infrastructure Sustainability Council of Australia) ISCA sustainability rating tool appears to be a good starting point for this. A tiered process (as described above) appears a suitable way of minimising the costs and maximising the benefits of incorporating this requirement.

Recommendation 2 – Sustainability reporting
IWA should consider including sustainability reporting as part of its annual reporting processes. Reporting should be consistent with the global standards for sustainability reporting produced by the Global Reporting Initiative (GRI)[1].

IWA should also consider including, as part of its sustainability reporting, disclosures on the financial risks of climate change, consistent with the recommendations of the Taskforce on Climate-Related Financial Disclosures (TCFD)[2].

[1] See https://www.globalreporting.org/standards/
[2] See https://www.fsb-tcfd.org/publications/

1. Introduction

Marsden Jacob Associates was commissioned by Infrastructure WA to provide sustainability and climate change advisory services to support the preparation of Western Australia's first 20-year State Infrastructure Strategy.

1.1 Background

Infrastructure WA (IWA) was established in 2019 to drive change and reform how the State plans and delivers infrastructure.

One of IWA's key projects is the preparation of the State Infrastructure Strategy (SIS) – which is due to be released in mid-2021 for public consultation. The SIS will set out WA's infrastructure needs and priorities over the next 20 years and will cover both physical infrastructure and "non-built" solutions (e.g. policy, regulatory, governance, etc.).

In mid-2020 IWA released *A Stronger Tomorrow, State Infrastructure Strategy Discussion Paper*, outlining IWA's approach to developing the SIS.

Through the public consultation for the SIS Discussion Paper, climate change was identified as a key issue affecting all infrastructure sectors and locations across Western Australia. It was also identified through feedback as a major driver for change in selecting, planning, designing and delivering infrastructure.

In November 2020, Western Australia released the Western Australian Climate Policy, which was supported by specific strategies relating to Electric Vehicles (which implemented a number of recommendations made by Marsden Jacob) as well as Carbon Farming and Land Restoration Programs, a big battery and commitment to reduce emissions across WA's public sector.

The need to align with the WA Climate Change Policy was identified by a number of submissions.

1.2 Project Scope

As part of developing the SIS, IWA sought input from sustainability and climate change advisory services. This project included collating and analysing information from Government Agencies and Government Trading Enterprises (GTEs) as well as providing analysis and recommendations on reforms required and key knowledge gaps.

The project was separated into two key parts which are summarised below:

1. Climate change policy including mitigation, data and adaptation decision-making
2. Infrastructure sustainability.

1.2.1 Part 1: Climate Change Policy

Under Part 1 of the project, Marsden Jacob was asked to review the current WA government policies and publications relating to climate change mitigation, data and adaptation and also to consult with key agencies. Originally it was envisaged that a survey of government agencies would contribute to the data collection, however, through the course of the project it was decided to collect the information through a combination of desktop research and direct engagement with agencies.

In undertaking the analysis, we were asked to consider the following points:

- identify the impact of WA's climate change policies on the ten SIS infrastructure sectors;
- identify the extent to which WA's change policies support the SIS's vision and six key opportunities and the ten SIS objectives; and
- recommend the next steps required across State Government's infrastructure sectors to progress these actions.

1.2.2 Part 2: Infrastructure Sustainability

Part 2 of the project was a review of Western Australia's Government infrastructure decision-making process to identify the extent to which these consider sustainability. Key elements of the review included:

- review of WA Government practices;
- review and compare interstate best practice against WA Government practices;
- provide recommendations on the extent to which the WA government processes which influence infrastructure planning and design should be modified to incorporate sustainability; and
- identify which sustainability rating tool, guideline or process might be best applied to the different asset classes/infrastructure sectors.

The project also required the production of a report collating the findings of both Part 1 and Part 2, documenting the findings and recommendations in addition to evidence upon which these are based.

2. Part 1: Climate change policy

2.1 Western Australia's climate change policies

Western Australia's (WA's) climate policies are set out in:

- Western Australian Climate Policy[3]
- Greenhouse Gas Emissions Policy for Major Projects[4]
- Environmental Factor Guideline, Greenhouse Gas Emissions[5]

2.1.1 Western Australian Climate Policy

The Western Australian Climate Policy was published in November 2020 following consultation on an Issues paper.[6] The policy frames WA's approach to both emission and climate adaptation and sets out outcomes and actions (focussing on current activities) using the following themes:

- Clean manufacturing and future industries
- Transforming energy generation and use
- Storing carbon and caring for our landscapes
- Lower-carbon transport
- Resilient cities and regions
- Government leadership

Climate change mitigation

The Western Australian Climate Policy provides an overarching policy objective by setting out an:[7]

> *aspiration of net zero emissions for Western Australia by 2050*

Under the Government leadership theme, the policy specifies that the State Government will develop sectoral emissions reduction strategies to guide cost-effective emissions reductions across key economic sectors as well as net zero emissions transition plans for government agencies and government trading enterprises (GTEs).

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[3] Department of Water and Environmental Regulation *Western Australian Climate Policy* (Government of Western Australia, Perth, 2020). The policy can be found at https://www.wa.gov.au/sites/default/files/2020-11/Western_Australian_Climate_Policy.pdf

[4] Government of Western Australia *Greenhouse Gas Emissions Policy for Major Projects* (Government of Western Australia, Perth, undated). The policy can be found at:https://www.der.wa.gov.au/images/documents/your-environment/climate-change/Greenhouse%20Gas%20Emissions%20Policy%20for%20Major%20Projects.pdf

[5] Environmental Protection Authority *Environmental Factor Guideline – Greenhouse Gas Emissions* (EPA-DWER, Perth, 2020). The policy can be found at: https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-—-greenhouse-gas-emissions-0

[6] Department of Water and Environmental Regulation, *Climate Change in Western Australia – Issues paper*, September 2019 https://consult.dwer.wa.gov.au/climatechange/issues-paper/user_uploads/climate-change-in-wa_2019.pdf

[7] Western Australian Climate Policy, page 5.

Discussions with Department of Water and Environmental Regulation (DWER) staff have indicated that Net Zero Transition Plans will be prepared by government agencies and GTEs. However, there does not appear to be a timeline for the delivery of these plans, or allocation of resourcing to develop the plans.

DWER will produce sectoral emission reduction strategies within the Department. Again, there does not appear to be a timeline for the delivery of these plans.

While the policy represents a significant "step forwards" by committing to net zero emissions, stakeholder engagement indicated that the climate policy lacks:

- a trajectory or pathway for emissions or interim emission targets;
- a detailed strategy on how the objectives will be achieved;
- a clear definition of emissions covered the net zero emissions trajectory;
- detail on current and projected emission levels; and
- a governance and reporting framework.

These criticisms are fully consistent with the shortcomings on mitigation aspects of the Western Australian policy identified through the review of state and territory climate change policies (discussed in section 2.3).

It is noted that the Sectoral Emission Reduction Strategies and Net Zero Transition Plans may provide some of the required detail, including reporting processes. However, is not certain that these documents will resolve all current shortcomings.[8]

Interaction between the climate policy and the SIS

The SIS explicitly includes climate change and net zero emissions at multiple points in the key opportunities and objectives:

- As an objective - *Adapting to the future by … addressing climate change and increasing resilience*
- As one of the six opportunity areas within the Vision- *Use our oil and gas capital and expertise to transition domestic industry to net zero emissions and become a global renewable energy generator*.

No elements of the SIS's vision and key opportunities and objectives appear to conflict with the Western Australian Climate Policy – but (as set out below) the Climate Policy has limited details on how the aspiration of net zero emissions will be achieved. As such, the Climate Policy provides limited support to the SIS. To overcome this shortcoming will require a greenhouse gas emissions reduction strategy to be developed and implemented. The strategy should detail how the government intends to achieve zero net emissions for Western Australia focussing on priority

[8] It is noted that the WA Treasury has published guidelines on Program evaluation, which if applied to Climate Change policy could help to address some of these issues especially around governance and reporting. These guidelines can be found at: https://www.wa.gov.au/government/document-collections/program-evaluation

sectors, including sectors covered by the SIS. It should also detail the magnitude and timing of proposed emission reductions and funding requirements.

It is planned that some of this detail will be provided in the sectoral emission reduction strategies, however, the timing for these are unclear, and so they will not support the development of the SIS.

The Western Australian Climate Policy currently provides limited detail to support the strategy at the sectoral level. A sectoral level greenhouse gas emissions reduction strategy is therefore required.

It appears likely that the SIS will be finalised before the Net Zero Transition Plans or the Sectoral Emission Reduction Strategies are finalised. Prior to these plans being finalised there is limited detail on how the aspiration of net zero emissions will be realised while, at the same time, meeting the requirements of the SIS.

This shortcoming is important because how the SIS is applied could have significant implications for WA's medium term and long term emission trajectories. It is therefore essential that development of the SIS is consistent with the net zero emissions objective - overall and across each of the ten infrastructure sectors. The Western Australian Climate Policy points to priority areas including manufacturing, energy, transport, landscapes and soils and cities. There is a strong correlation between these areas and the 10 priority sectors covered by the SIS. Further analysis is required however, as part of strategy development, to identify priority emission reduction sectors and to map out emission reduction pathways for those sectors.

Climate change adaptation

Additionally, the policy briefly scopes programs to coordinate the generation and sharing of climate change data and also identifies climate change adaptation as key areas for further work.

Key climate change adaptation actions under the WA Climate Policy include:

- Climate Science Initiative
- Climate Resilience Action Plan
- Pilot Sectoral Adaptation Plan
- Coastal adaptation program and fund
- Water infrastructure investment and improved water resource legislative framework
- Several bushfire risk mitigation strategies

The review of state climate change policies (discussed in the previous section) also points to significant shortcomings with the adaptation aspects of Western Australia's climate policy. In particular, the current policy lacks prioritised sectors for adaptation planning and comprehensive and detailed adaptation plans covering those sectors. Improved climate change projections are also needed for WA regions. An action within the Climate Policy is the 'Climate Science Initiative' (managed by DWER) which will[9]:

[9] Western Australian Climate Policy, page 27

[f]und regional climate change projections, downscaled to higher spatial resolution, for priority regions in Western Australia including the north-west

It is intended that this will cover a broad range of climate variables but may be limited by funding and as such the initiative could be scaled accordingly to identify the highest priorities. The climate modelling will be carried out by an outside organisation (for example CSIRO or BOM) but the implementation of this project has not yet been finalised, and the final decision will be based on identified gaps in knowledge.

There is also limited information on which sectors and infrastructure in WA are particularly vulnerable to climate change and how the vulnerability of those sectors and infrastructure can be reduced and their adaptive capacity enhanced. Again, this shortcoming is important in the context of the SIS to ensure that infrastructure is developed in a way that reduces its vulnerability to climate change. Preliminary assessment indicates the sectors most vulnerable to the impacts of climate change include many of the 10 priority SIS sectors including social and affordable housing, health and water. Substantial additional analysis is required however, to identify the sectors and infrastructure most vulnerable to climate change, and to develop adaptation strategies for those sectors.

A pilot sectoral adaptation plan is an action under the Climate Policy. However, there is limited detail as to how adaptation planning will be rolled out across the sectors.

2.1.2 Greenhouse Gas Emissions Policy for Major Projects and Environmental Factor Guideline

The *Greenhouse Gas Emissions Policy for Major Projects* and *Environmental Factor Guideline, Greenhouse Gas Emissions* establish a framework and guidance on how the net zero emissions objective will be achieved, at least in relation to major projects that are subject to assessment by the Environmental Protection Authority (EPA).

The Greenhouse Gas Emissions Policy for Major Projects and the Environmental Factor Guideline are more useful in that they provide some guidance on how the net zero emissions objective will be achieved at the individual project level. The Greenhouse Gas Emissions Policy,[10] for example, establishes that the Minister for Environment will consider the particular characteristics of each (major) project and based on the advice of the EPA

> *The Government may then consider whether it is appropriate to apply a condition that sets out the requirements for a plan detailing the proponent's contribution towards achieving the Government's aspiration of net zero emissions by 2050.*

The Environmental Factor Guideline provides further detail, stating that:

[10] *Greenhouse Gas Emissions Policy for Major Projects*, p.1

> *When the EPA applies this guideline in assessing a proposal, the EPA will require proponents to develop a Greenhouse Gas Management Plan as part of the assessment process that demonstrates their contribution towards the aspiration of net zero emissions by 2050.*

The Guideline further states that at a minimum, a Greenhouse Gas Management Plan should outline:

- *intended reductions in scope 1 emissions over the life of the proposal*
- *regular interim and long-term targets that reflect an incremental reduction in scope 1 emissions over the life of the proposal*
- *strategies which demonstrate that all reasonable and practicable measures have been applied to avoid, reduce and offset a proposal's scope 1 emissions over the life of the proposal.*

The Guideline then stipulates that it may request information on mitigations that demonstrate that all reasonable and practicable measures have been applied at each step of the mitigation hierarchy.

Taken together, these requirements provide some guidance to proponents of major projects on measures that they will need to take to ensure that individual projects are consistent with the Government's aspiration of net zero emissions by 2050. However, the two documents, as currently framed and administered, do not ensure that infrastructure projects align with the net zero emissions aspiration of the Western Australian Climate Change Policy. To that end, we note that one of the actions detailed in the Policy is to:

> *Administer the Greenhouse Gas Emissions Policy for Major Projects to require major emitters assessed under the Environmental Protection Act 1986 to set emissions reduction targets and outline their contribution to the State's net zero aspiration."*

If the Greenhouse Gas Emissions Policy for Major Projects is administered to ensure this outcome is achieved, then closer alignment of the policy with the net zero emissions aspiration will be achieved. However, revisions to the Greenhouse Gas Emissions Policy for Major Projects would be desirable to remove any ambiguity as to whether **all** major emitters assessed under the *Environmental Protection Act 1986* are required to set emissions reduction targets and outline their contribution to the State's net zero aspiration. Moreover, changes to the Environmental Factor Guideline will be required to ensure that the Greenhouse Gas Management Plans of proponents include targets, strategies and intended reductions covering both Scope 1 **and Scope 2 emissions**[11] over the life of the project.

[11] Scope 1 emissions are direct emissions from the activities of an organisation (eg emissions from fleet vehicles or cooling and heating of a building). Scope 2 emissions are indirect emissions for which an organisation is ultimately responsible (eg emissions from the energy produced and used by an organisation).

The *Greenhouse Gas Emissions Policy for Major Projects* and the *Environmental Factor Guideline, Greenhouse Gas Emissions*, set greenhouse gas emission objectives against which individual infrastructure projects can be assessed. However, changes are required to both the Policy and the Guideline to remove ambiguity as to whether all major emitters are required to set emissions reduction targets and to ensure that the Greenhouse Gas Management Plans of proponents cover both Scope 1 and Scope 2 emissions.

2.2 Impact of WA's climate change policies on the ten infrastructure sectors

Due to the nature of climate change it has varying impacts on different infrastructure sectors. Table 1 summarises the relevant government agencies and GTEs under each sector as well as the importance of each element of the climate change policies to each sector.

Assessment of strategies involved a 'traffic light' system, which was applied as follows against each criterion:

	Very important
	Important
	Less important

Table 1: Key sectors considered in the SIS and their alignment to Climate change topics and references

Sector	Agencies and GTEs	Infrastructure assets under State Government operational control	Climate Change Topics			Sectoral key documents
			Impact on Greenhouse gas reduction Strategies	Hold climate change data	Climate change adaptation risk	
Transport	Dept of Transport Main Roads Public Transport Authority Port authorities[12]	Office buildings Vehicle fleet Buses Trains Port operations	🟢	🟢	🟢	Electric Vehicle Strategy
Education and training	Dept of Education Dept of Training and Workforce Development	Office buidlings Vehicle fleet Primary & secondary schools TAFEs *Universities (privately owned)*	🔴	🔴	🔴	
Energy	Energy Policy WA Synergy/Western Power/Horizon	Office buildings Vehicle fleet Government owned electricity generation Transmission and distribution lines	🟢	🟢	🟢	Clean Energy Future Fund
Social and affordable housing	Dept of Communities Development WA	Social housing owned by Department of Communities	🟡	🔴	🟢	
Water	Dept of Water and Environmental Regulation Water Corporation Aqwest Busselton Water	Office buidlings Vehicle fleet Desalination plants Wasterwater treatment plants	🟡	🟢	🟢	www.watercorporation.com.au/Our-water Waterwise Perth Action Plan Climate change and waterways
Health	Department of Health Health services	Office buildings Vehicle fleet Hospitals Community health buildings	🔴	🟢	🟢	New health and climate change framework for WA
Waste	Dept of Water and Environmental Regulation Waste Authority	*Regional council owned assets: landfills and Materials Recovery Facilities*	🟡	🔴	🔴	
Justice and public safety	Dept of Justice WA Police	Office buildings Vehicle fleet Prisons and deten	🔴	🟡	🟡	Includes Dept of Fire and Emergency Services Flooding & Traditional Fire management
Digital and telecommunications	Dept of Jobs, Tourism, Science and Innovation Dept of Primary Industries and Regional Development	No state government owned assets	🔴	🔴	🔴	Technology to adapt
Arts, culture, sport and recreation	Dept of Local Government, Sport and Cultural Industries Dept of Biodiversity, Conservation and Attractions	Buildings Vehicle fleet Land	🔴	🔴	🟡	Sports and recreation focus
Other/ spread across several sectors	Dept of Primary Industries and Regional Development Dept of Mines, Industry Regulation and Safety Dept of Planning, Lands Heritage		🟢	🟢	🟢	Building standards NCC 2019 State Planning Policies

[12] As a result of amalgamation in 2014, there are five port authorities responsible for the nine ports in Western Australia.

2.2.1 Assessment of each impacted sector across the range of government influence

Focussing on the sectors which are identified as being important or very important under one of the categories above (Table 1), it is possible to identify the impact of the Climate policies on each sector as well as current Government activities investment in that sector.

Table 2 proposes a framework for assessing each of the sectors that are impacted significantly by climate change policy and identifies the current and planned activities that will be used to tackle Emission reduction.

The value of this framework is that it focusses on both Government investment and private sector investment in infrastructure in order to achieve emissions reductions. As noted in the table, Government investment will be detailed by each Department in Net Zero Transition plans and the trajectory for private sector emissions will be to be set in Sectoral Emission Reduction Strategies.

The table also considers (in summary) whether the legislative framework is fit for purpose and able to incorporate climate change requirements.

It should be noted that this framework is partially populated and that providing detail across all sectors would be a substantial piece of work to undertake. It should also be noted that this framework will be filled out in further detail as Net Zero Transition plans and Sectoral Emission Reduction Strategies are prepared.

On the following page, Table 3 uses a similar framework to Table 2, but focusses on Climate change adaptation.

It can be seen that there is less information in this table – as there is less clarity on whether the legislative frameworks are appropriate.

Table 2: Proposed framework for identifying current and planned activities that will be used to tackle climate mitigation (partially populated)

Sector	Government investment (to be detailed by each Dept in Net Zero Transition plans)	Rules and incentives for private sector investment (Trajectory to be set in sectoral emission reduction strategies)	Legislative framework is fit for purpose and able to incorporate emission reduction requirements, or create impediments to this occurring
Transport	EV strategy METRONET Sustainability Strategy Transport Joint sustainability strategy (unpublished)	EV incentives proposed in EV strategy	Loss of automotive fuel excise will leave Governments exposed (COAG issue). Need alternative road pricing framework. Could include other factors such as congestion & pollution in a road pricing solution.
Energy	Western Power/Synergy/Horizon	Emission Reduction through: • increased reliance on renewables, and • increased energy efficiency	Batteries need to be included for capacity credits & Ancillary Services (e.g. balancing) EV recharging would require a retail licence
Water	Water Corporation have a Net Zero Target and are working on a Climate Transition plan (unpublished)	Sustainability objectives are well incorporated in self-supply framework No specific constraints	Water Acts are dated and need reform before climate change could be easily incorporated.
Waste	Small number of waste facilities are govt owned. Most are local govt and private	Part IV & V of the Environment Protection Act requirements for landfills (may need review)	Waste Act reforms are proposed (Closing the loop) to encourage the circular economy – which can reduce reliance on primary material & energy consumption & landfill
Other/ spread across sectors: - Building Efficiency - Land use & planning (Urban/Agricultural/Pastoral)	Will be done as part of Net Zero Transition plans	National Construction Code 2019 (delayed in WA)	Pastoral land reform may be needed to allow renewables investment in Pastoral areas

Note: This is not a comprehensive list of all planned and current activities – but rather a selection that were identified at the time of the report being commissioned. The table illustrates the type of investments or consideration which are either being undertaken, or may be required, across both public and private sectors.

Table 3: Proposed framework for identifying current and planned activities that will be used for climate change adaptation (partially populated)

Sector	Government investment	Rules and incentives for private sector investment	Legislative framework is fit for purpose and able to incorporate climate change adaptation requirements
Transport	PTA did a vulnerability assessment of network (unpublished) Ports – Coastal hotspots		
Energy	System resilience		
Water	Waterwise Perth action plan www.watercorporation.com.au/Our-water	Water allocation process considers reduced rainfall scenarios Climate change and waterways	
Health	New health and climate change framework for WA	Low importance	
Waste	Low importance	Assessment of proposed locations may include consideration of climate risks?	
Justice and public safety		Very important: Emergency services – some avoided through land use planning Also Worksafe WA	
Other/ spread across sectors: • Building Efficiency • Land use & planning (Urban/Agricultural/Pastoral)	Govt management of crown land	State planning policy 2.6 (Coastal Planning) Climate ready agriculture	Increased interest in Recreation & Urban heat effects Pastoral land reform may be needed to allow renewables investment in Pastoral areas

Note:

a. This is not a comprehensive list of all planned and current activities – but rather a selection that were identified at the time of the report being commissioned. The table illustrates the type of investments or consideration which are either being undertaken, or may be required, across both public and private sectors.

The capacity to mitigate greenhouse gas emissions varies significantly between the ten priority infrastructure sectors. Similarly, the requirement for climate change adaptation clearly is more important for some sectors than others.

Some government agencies and GTEs have already undertaken an evaluation of climate risks to their operations (for example the PTA's review of vulnerability and Department of Planning, Lands and Heritage's coastal assessment strategy). However, published policies and strategies are currently sparse - particularly in the climate change adaptation space.

2.2.2 Note on the sectors as identified in the SIS

It is noted that the sectoral definitions vary in breadth. In particular *Social and affordable housing* is narrowly defined. This narrow definition currently leaves some key related areas, such as urban land use planning and the regulation of building energy efficiency, without effective coverage in terms of climate change adaptation and greenhouse gas mitigation.

Similarly, agriculture sector does not currently "belong" in any of the ten priority infrastructure sectors, leaving a significant potential gap in terms of climate change adaptation and greenhouse gas mitigation.

We note that the SIS Discussion paper states:[13]

> *The Strategy must:*
>
> - *include prioritised recommendations on projects, programs and other options (for example, policy, regulatory, pricing, technology and governance reforms/settings), to meet the State's infrastructure needs and priorities; and*

This statement clearly indicates that the scope of the strategy should be broader the Government's investment in infrastructure and includes Government's role as a regulator and central planning group. This broader approach is also consistent with the aspiration of net zero emissions for Western Australia by 2050. To achieve this, it will be necessary to consider infrastructure investment in terms of Government investment (by Departments and Government Trading Enterprises) and also investment by the private sector.

IWA should consider whether the *Social and affordable housing* sector should be broadened to cover buildings and land use planning.

[13] State Infrastructure Strategy Discussion Paper https://prod-iwa-public-files.s3.ap-southeast-2.amazonaws.com/public/2020-06/40681%20INFWA_InfrastructureWA_Discussion_Paper_FINAL.pdf

2.3 Comparison of climate change policies with other states and territories

As a part of developing this advice we have undertaken a review of state and territory government climate change strategies and plans, considering both the emissions mitigation and adaptation aspects of climate change response. We have also reviewed relevant international literature and strategies. Based on these reviews we have established a series of criteria against which the state and territory strategies for each of the emissions mitigation and adaptation aspects have been qualitatively assessed. The criteria are as follows:

Mitigation

- Is the strategy underpinned by a legislated emissions reduction objective (e.g. achieve net zero emissions by 2050)?
- Are there interim emission reduction targets and timelines?
- Is there a requirement for regular (e.g. annual) reporting against the targets and objective?
- Is the reporting supported by a detailed baseline emissions inventory and emissions projections (that is consistent with but builds on the National Greenhouse Gas Inventory at state and sectoral levels)?
- Does the strategy include a comprehensive and fully funded action plan aimed at meeting the objective and targets?

Adaptation

- Is the strategy underpinned by a legislated adaptation planning requirement with regular review and update of plans?
- Have detailed, purpose built, regional climate change projections been developed or are they being developed to support adaptation planning?
- Have comprehensive, up to date adaptation action plans been developed or are they being developed for all priority/key vulnerable sectors, with ongoing funding for implementation?

Assessment of strategies involved a 'traffic light' system, which was applied as follows against each criterion:

	yes
	in part
	no

The assessment is presented in Table 4 (emissions mitigation criteria) and Table 5 (adaptation criteria).

All states and territories have an emissions reduction objective (typically net zero emissions by 2050, with South Australia's objective being net zero emissions by 2045). Only the ACT, South Australia and

Victoria have legislated objectives, however. NSW, Queensland and South Australia also have interim targets for 2030 (30%, 35% and 50% below 2005 levels respectively). Victoria, South Australia and the ACT all have multiple targets, with Victoria having legislated targets, to be set every five years to 2050. These jurisdictions also have mandatory reporting requirements against their targets. All states and territories set out actions aimed at achieving their targets and objectives, but most contain gaps in the sectors covered by the actions or appear not to be fully funded. Only NSW appears to have a comprehensive action plan that details how its interim (2030) target will be achieved.

All states and territories include climate change adaptation initiatives as part of their strategies.[14] Only Victoria though, has implemented a comprehensive adaptation plan, underpinned by legislation. Victoria's adaptation plan is supported by detailed climate change projections for Victorian regions (CSIRO), identifies priority sectors for adaptation planning and establishes a suite of measures to be implemented for those sectors. It has also initiated a pilot adaptation planning phase for each priority sector, lessons from which will soon be incorporated into updated sectoral adaptation plans. Some of the other jurisdictions have commissioned detailed climate change projections (NARCliM - ACT, NSW and South Australia) and have developed reasonably comprehensive adaptation plans (ACT, NSW, Queensland and South Australia).

Based on the assessment, it is apparent that Victoria has the most comprehensive of the state and territory policies across the emissions mitigation and adaptation criteria. Noting this, Table 6 provides further details of Victoria's climate change emissions mitigation and adaptation strategies.

All states and territories have an emissions reduction objective (typically net zero emissions by 2050). Only three jurisdictions (ACT, South Australia and Victoria) have legislated this objective however and have a requirement for mandatory reporting against the targets – making the process more transparent as to each jurisdiction's progress. Funding shortfalls and gaps within the stated actions remain an issue for all jurisdictions.

Victoria is the only State to have implemented a comprehensive adaptation plan. Victoria's plan is legislated, supported by climate projections, identifies priority sectors and establishes measures to be implemented. Some other jurisdictions are currently establishing climate change projections and developing comprehensive adaptation plans (ACT, NSW, Queensland and South Australia).

Victoria should currently be seen as the 'gold standard' for adaptation policies and, along with the ACT and NSW, for mitigation policies. While other states are lagging, especially on climate change adaption, , Western Australia is furthest behind – as no detailed plans are currently in place for either sectorial emissions mitigation or adaptation.. To the limited extent that Western Australia does have plans in place, it is unclear as to how these will be resourced going forward, both in terms of the skill sets required within government agencies and the funding required to carry out mitigation and adaptation measures.

[14] Victoria recently released *Victoria's Climate Change Strategy* (Department of Environment, Land, Water and Planning, Melbourne, 2021) which outlined strategies and initiatives to support the state in achieving its interim targets (28 – 33% by 2025 and 45 – 50% by 2030) and target of net zero by 2050. Each sector has actions (or 'emission reduction pledges') to support these targets.

Table 4: Assessment of state and territory greenhouse gas emissions mitigation strategies

State/territory	Legislated objective?	Interim targets & timelines?	Reporting against targets & timelines?	Detailed baseline emissions inventory & projections?	Comprehensive & fully funded action plan?
ACT[a]					
New South Wales[b]					
Northern Territory[c]					
Queensland[d]					
South Australia[e]					
Western Australia					
Victoria[f]					

Notes:

a. *ACT Climate Change Strategy 2019–25,* https://www.environment.act.gov.au/cc/act-climate-change-strategy

b. *NSW Climate Change Policy Framework* and Net *Zero Plan Stage 1: 2020–2030,* https://www.environment.nsw.gov.au/topics/climate-change

c. *Northern Territory Climate Change Response: Towards 2050,* https://depws.nt.gov.au/programs-and-strategies/climate-change-response-towards-2050

d. *Pathways to a clean growth economy: Queensland Climate Transition Strategy*, https://www.qld.gov.au/environment/climate/climate-change/transition/queensland-climate-transition-strategy

e. *South Australian Government Climate Change Action Plan 2021–2025,* https://www.environment.sa.gov.au/topics/climate-change/climate-change-action-plan-2021-2025

f. *Victoria's* Climate Change Framework, Climate Change Act 2017, and *Interim Emissions Reduction Targets for Victoria (2021-2030),* https://www.climatechange.vic.gov.au/

Table 5: Assessment of state and territory climate change adaptation strategies

State/territory	Legislated adaptation planning with regular review and update of plans?	Detailed regional climate change projections?	Comprehensive adaptation plans for priority sectors?
ACT[g]			
New South Wales			
Northern Territory			
Queensland[h]			
South Australia			
Western Australia[i]			
Victoria[j]			

Notes:

g. ACT Climate Change Adaptation Strategy: Living with a Warmer Climate, https://www.environment.act.gov.au/__data/assets/pdf_file/0004/912478/ACT-Climate-Change-Adaptation-Strategy.pdf

h. Pathways to a climate resilient Queensland, Queensland Climate Adaptation Strategy, 2017–2030, https://www.qld.gov.au/environment/climate/climate-change/adapting/strategy

i. Victoria's Climate Change Adaptation Plan 2017 – 2020, https://www.climatechange.vic.gov.au/

Table 6: Summary of Victoria's climate change policy

Greenhouse gas emissions mitigation			Climate change impacts and adaptation planning	
Objective & targets	Mitigation strategy	Emissions data	Adaptation plans	Climate change data
Objective - long-term emissions reduction target of net zero greenhouse gas emissions by 2050 Targets – interim targets set every 5 years from 2020 to 2050 by Premier and Minister for Energy, Environment and Climate Change drawing on advice of Independent Expert Council	Sector pledges – a description of actions to reduce emissions and a reasonable estimate of the total level of emissions reductions expected from those actions. Those sectors: • Energy, including stationary energy, transport and fugitive emissions; • Industrial Processes and Product Use; • Agriculture; • Waste; and • Land Use, Land Use Change and Forestry Target set over six interim five year periods. At the end of each interim target period the Minister will be required to produce a report stating whether the target for the period in question was achieved and, if not, explain why.	Annual greenhouse gas reporting will monitor the state's progress in reducing greenhouse gas emissions.	Adaptation action plans (AAP) – system-based plans which are developed every 5 years and cover: • Built environment • Education and training • Health and human services • Natural environment • Primary production • Transport, and • Water cycle These sectors are also part of a pilot phase. Each Adaptation action plan will begin with a 'gap analysis' to determine how current policy for that system addresses the priorities contained in the most recent Climate Change Strategy (also every 5 years).	Detailed regional projections developed at a 5 km by 5 km scale through CSIRO. These are to be updated regularly

2.4 Recommendations

2.4.1 Greenhouse gas emissions reduction recommendations

Table 7 sets out recommendations focussed on achieving Western Australia's objective of achieving net zero emissions by 2050 and ensuring that development of infrastructure in Western Australia is consistent with that objective.

2.4.2 Climate change adaptation recommendations

Table 8 sets out recommendations focussed on achieving effective climate change adaptation in Western Australia including in relation to infrastructure development.

Table 7: Greenhouse gas emission reduction recommendations

Recommendation 1 Emissions reduction strategy	Recommendation 2 Government actions	Recommendation 3 Infrastructure assessment and approval	Recommendation 4 Legislated emission reduction targets Net Zero Transition Plans
The Government should develop an emissions reduction strategy for Western Australia. The strategy should detail how the government intends to achieve zero net emissions for Western Australia focussing on priority sectors, including many of the sectors covered by the SIS. The strategy should include/be supported by: • a legislated emissions reduction objective • interim emission reduction targets and timelines • a requirement for annual reporting against the targets • a detailed baseline emissions inventory and emissions projections. Noting the importance of priority infrastructure sectors to achieving the whole of state objective and targets, sectoral strategies should, as a minimum, include a detailed emissions baseline and projections and emission reduction targets and timelines.	The emissions reduction strategy should also detail a comprehensive suite of actions aimed at achieving the emissions reduction objective and interim targets and cover the full range of interventions in priority sectors. In broad terms, emission reductions are likely to come from increased use of renewable energy, increased energy efficiency, other carbon mitigation measures (where applicable) and carbon sequestration and offsets (where emission mitigation is not feasible or cost effective). Interventions will include: • Standards and regulations • Rebates and incentives • Consumer education such as through mandatory disclosure of efficiency • Preferred purchasing (e.g. carbon neutral) for government projects and programs	The Greenhouse Gas Emissions Policy for Major Projects should be amended to ensure that all major emitters assessed under the Environmental Protection Act 1986 are required to set emissions reduction targets and outline their contribution to the State's net zero aspiration. The Environmental Factor Guideline should be amended to ensure that the Greenhouse Gas Management Plans of proponents include targets, strategies and intended reductions covering both Scope 1 and Scope 2 emissions over the life of the project. The Government should ensure that approval of all major infrastructure projects (government and non-government) subject to them meeting the Policy and Guideline.	The Government should proceed with its commitment, as outlined in the Western Australian Climate Policy, to require government agencies and government trading enterprises (GTEs) to develop net zero emission transition plans for their operations. Agencies and GTEs should be accountable for achieving the transition plans, with progress against the plans being reported in the Annual Report and audited by the Office of the Auditor General.

Recommendation 1 Emissions reduction strategy	Recommendation 2 Government actions	Recommendation 3 Infrastructure assessment and approval	Recommendation 4 Legislated emission reduction targets Net Zero Transition Plans

Table 8: Climate change adaptation recommendations

Recommendation 1 Legislated adaptation planning	Recommendation 2 Sectoral and infrastructure adaptation plans	Recommendation 3 Climate change data
The Government should enshrine effective climate change adaptation planning in legislation, including a requirement to develop and fund a comprehensive adaptation plan. A suitable department (e.g. DWER or DPC) should co-ordinate development of the plan and periodic reviews (e.g. every five years), consistent with the latest climate change science and state and regional climate change projections (see Recommendation 3).	As part of developing an adaptation plan, the Government should undertake or commission further assessment to identify the most vulnerable sectors to climate change and to prioritise them for adaptation planning. Adaptation plans for the priority sectors should be undertaken by the relevant agency or department and co-ordinated by the co-ordinating Department. The sectoral plans should include actions relating to infrastructure planning and development. The Government should ensure that infrastructure approvals processes are consistent with the sectoral plans.	The Western Australian Climate Policy commits the Government to funding regional climate change projections, downscaled to higher spatial resolution, for priority regions in Western Australia including the north-west. The Government should consider extending that work to cover all regions in Western Australia. Prior to commissioning a recognised climate change modelling organisation (e.g. CSIRO, NARCliM) to developing projections, the Government should consider engaging a suitable specialist in climate science communications to research best practice in developing, presenting and using climate change projections. The purpose of the research will be to

Recommendation 1 Legislated adaptation planning	Recommendation 2 Sectoral and infrastructure adaptation plans	Recommendation 3 Climate change data
		ensure that projections are fit for purpose in infrastructure, policy and other decision-making.

3. Part 2: Infrastructure sustainability

3.1 Current WA approach

Through discussions with Department of Treasury and a range of WA government agencies the following points were noted:

- The current Treasury Gateway process[15] (which applies to larger projects) aligns with the proposed three phase assessment of infrastructure and that sustainability is mentioned within these assessments. We did not establish the proportion of projects that undertake sustainability assessments through this process.
- Currently no guidance or tools are provided for the inclusion of sustainability assessments within the Gateway process (for large projects) or the investment proposals process[16] (for smaller projects). It is likely that the absence of guidance results in inconsistent applications of sustainability assessments.
- Concerns were raised that requiring all projects to follow guidance on sustainability assessments or use a sustainability tool could add costs and time delays projects.
- While there is not a uniform approach to including sustainability within project selection, design and review, some sectors within the WA Government use sustainability tools extensively. One key example is the Department of Transport's use of the ISCA tool for large projects.

It would appear that providing guidance on how sustainability assessments should be applied (where relevant) would not add unnecessary administrative burden and would improve the standard and consistency of these assessments. The guidance would only need to be applied to projects where sustainability impacts were already considered and would set out how the sustainability assessment would be approached and elements to consider.

It would also appear that a tiered approach to including sustainability assessments, would minimise the impact on project timings and budgets. A possible tiered framework that would both improve the quality and comparability of sustainability assessments, while minimising cost and time delays for projects would be:

1. Guidance on approaching sustainability assessments (where relevant) is provided for all projects
2. Projects over a set value (e.g. $20 million) and are likely to have cultural or environmental impacts are required to consider sustainability impacts in line with the guidelines
3. Major projects (greater than $100 million) are required to use the ISCA tool to assess sustainability

If it were accepted that a tiered approach to sustainability assessments would be beneficial, then this requirement could be implemented efficiently. A key process to minimise the cost and time

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[15] https://www.wa.gov.au/service/government-financial-management/procurement/gateway-review-process-and-gateway-reviewer-training

[16] https://www.wa.gov.au/organisation/department-of-treasury/investment-proposals

requirements of implementation would be to ensure that knowledge and experience on sustainability assessments and the use of tools (such as ISCA) is shared between government agencies.

3.2 Analytical framework for Infrastructure Sustainability

The United Nations defines sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."[17] Our understanding of sustainability and how we implement sustainability into decision making will continue to evolve over time as we find new ways of operating and improve our understanding of the impact of decisions today on future generations. Sustainability with respect to infrastructure has traditionally focused on a Triple Bottom Line assessment at a project, product or policy level:

- **Environmental**: Reducing the impact of building design, construction, operation and disposal through material selection, energy efficiency, waste and water management and other.
- **Social**: Ensuring infrastructure has a positive impact on the local and broader social condition such as cultural heritage, employment opportunities and community wellbeing.
- **Economic:** Ensuring intergenerational equity in how infrastructure is financed at all stages of the life cycle.

Since the United Nations Sustainable Development Goals came into effect in 2015, consideration of Sustainability in Infrastructure and the requirement for analytical frameworks to embed Sustainability in Infrastructure has evolved.

Traditional guidance for Infrastructure is documented in State Infrastructure Plans and Strategic Asset Management Frameworks. Western Australia's infrastructure decision making process is described in the Strategic Asset Management Framework (SAMF) and the Gateway Review process. As they currently stand, sustainability as a concept and practice is not built into the Western Australian Infrastructure assessment process as a key consideration - although it is noted that some individual portfolios (such as Transport) do apply sustainability assessment frameworks when considering the design of the project.

To best inform how sustainability can be integrated into the framework, we have reviewed other jurisdictional approaches across Australia and recommend a framework for best practice integration of Sustainability.

Most states have developed both an Asset Management Framework and a State Infrastructure Plan. While the exact style and purpose of these documents varies from state to state, the basic purpose of the infrastructure plan is similar to Western Australia's planned SIS which:

[17] United Nations (1987) Brundtland Commission

will set out WA's infrastructure needs and priorities over the next 20 years and will cover both physical infrastructure and "non-built" solutions (e.g. policy, regulatory, governance, etc.).

The Strategic Asset Management Framework (SAMF) sets out tools and processes to ensure quality advice and decision-making is made with respect to Asset identification, planning, operation and disposal. A central SAMF also ensures a high level of consistency between agencies, within Government. These documents are catalogued in Table 9.

Table 9: A catalogue of Infrastructure plans and Asset Management Frameworks in other Australian Jurisdictions

	State Infrastructure plans / Infrastructure Strategies	Asset Management Framework
NSW	State Infrastructure Strategy 2018-2038 outlines a five-step assessment process for identifying, assessing and prioritising infrastructure programs and projects. Includes triple bottom line impacts as part of project evaluation (INSW, 2018, page 27).	Asset Management Policy TTIP19-07 (NSW Treasury, 2019) mandates a whole-of-asset-lifecycle approach to assets which includes making better use of existing assets and broadening assessments of asset performance to consider economic, social and environmental benefits.
Victoria	Victoria's Draft 30-Year Infrastructure Strategy (2020) compiles a large number of recommendations for how Infrastructure planning can do more in terms of sustainability and climate change but doesn't provide guidance or tools for prioritising, monitoring or reviewing infrastructure projects against these targets.	https://www.dtf.vic.gov.au/infrastructure-investment/asset-management-accountability-framework
Qld	The Queensland Government's State Infrastructure Plan Part A: Strategy (2016) outlines the future direction of infrastructure in the state in the context of changing climate and need for increased sustainability, but doesn't provide guidance or tools for prioritising, monitoring or reviewing infrastructure projects against these targets.	The Queensland Government's Strategic Asset Management Framework is focused on best practice guidelines for the management of Government buildings specifically. They include guidelines for Environmental Sustainability Management (2017) covering planning, construction, operating and maintenance.
South Australia	https://www.infrastructure.sa.gov.au/our-work/20-year-strategy . South Australia's 20-year State Infrastructure Strategy outlines the importance of preserving South Australia's unique natural environment, resources and reputation for being clean and green into the future. It discusses many ways that the construction and operation of State Infrastructure can influence sustainability, climate change adaptation and emissions, and how they influence risk to infrastructure projects. It gives examples of how impacts can be addressed during planning but does not specify that they must.	dpti.sa.gov.au/facilities_..._framework DPTI's Strategic Asset Management Framework states that the agency responsible for asset management should take a balanced approach to economic activity, environmental responsibility and social progress to ensure all asset management activities are sustainable in perpetuity. They refer to Ecological Sustainable Development resource documents and also state that asset management must comply with South Australia's Government Buildings Energy Strategy.

Our review found Queensland incorporates sustainability within their analytical framework applying the most encompassing definition of the term. While many other states refer to sustainability, usually environmental sustainability, the framework is often implicit and used for project evaluation rather than broader strategic planning.

Similarly, Queensland is the only state to explicitly include Sustainability Assessment tools into their analytical framework. They advocate for the use of existing tools, Green Building Council of Australia's Green Star Rating tool and Infrastructure Sustainability Council of Australia's (ISCA) Infrastructure Sustainability rating tool. Building Queensland has also collaborated with both organisations to develop an internal project team approach for considering sustainability.

Our review found that the minimum implicit inclusion of Sustainability is already occurring during the project evaluation phase in most states because most include a Gateway process for reviewing projects which includes analysis considering social, environmental and economic costs and benefits across the project life. Most states are also managing and minimising social an environmental impact of projects through environmental reporting and providing guidance for improving performance of existing assets such as health care buildings and schools.

Post implementation reviews were introduced in Queensland in 2015. There, a review of the Business Case framework, is used to assess whether the framework is effective and efficient in achieving sustainable outcomes or whether there are areas for improvements.

We note the approach taken by Queensland is in line with the recommendations made to Infrastructure Australia in "Integrating Sustainability into the Infrastructure Australia Analytical Framework (IAAF) Draft"[18]. The final recommendations were to make incremental adjustments to the IAAF with the view of incorporating a specific sustainability assessment in the future.

3.3 Inclusion of sustainability at three phases

Based on the recommendations provided to Infrastructure Australia and applying Marsden Jacob's experience from other sectors, we suggest best practice should consider sustainability at three distinct phases:

1. Shortlisting and selecting projects on a Triple Bottom Line basis, including a sustainability assessment in addition to existing requirements
2. Managing and minimising environmental, social and economic impacts of infrastructure once a project has been selected, and
3. Review of implemented projects to ensure outcomes meet objectives.

The following sections provide an overview of the most common rating tools used summarise the guidance and tools provided by other states through the lens of the three phases. We note considerable amount of documentation is provided comparing the states' sustainability tools and

[18] Frontier Economics, *Integrating sustainability into Infrastructure Australia's Assessment Framework* (2020 unpublished)

guidance in the Infrastructure Australia Review and thus have only gone into the level of detail required to build on the review and the analytical framework recommended as best practice.

3.3.1 Overview of most common rating tools used

The Infrastructure Sustainability Council of Australia's (ISCA) rating tool evaluates[19]:

> *…sustainability across the planning, design, construction & operations phases of infrastructure programs, projects, networks and assets. The IS Rating evaluates the sustainability performance of the quadruple bottom line (governance, economic, environmental and social) of infrastructure development.*

The tool has been developed for use in a number of sectors including: transport (ports, air, rail and road); social infrastructure; telecommunications; energy; water and waste.

There are currently two versions of the IS tool – the updated version (2.0) provides certification with an overall score between 20 and 95+ and expanded the number of categories. The categories are:

- 20-39 – Bronze
- 40-59 – Silver
- 60-79 – Gold
- 80-94 – Platinum
- 95+ - Diamond

The Frontier report notes that[20]:

> *…GBCA and ISCA tools are the most relevant for potential use in conjunction with the IAAF. This is because they are applicable to infrastructure in the planning phase.*

The GBCA tool is the Green Star system, another stand-alone sustainability tool. This was developed, and is maintained by, the Green Building Council of Australia.[21] It is a sustainability rating system which can operate at various scales such as for a community, an individual building or fit-out within a building. Green Star rates the design of the building at the conceptual and 'at built' stage.

The rating system has nine categories which are management; Indoor environmental quality; energy; transport; water; materials; land use and ecology; emissions and innovation.

Green Star has a performance rating system for buildings with the scale covering one star (minimum practice) through to six stars (world leadership). Ratings for 'design and as built' 'interiors' and 'communities' are rated between four stars (best practice) and six stars. Certification is awarded after a third-party assessment panel reviews the documented evidence. Current buildings certified by this tool tend to be office or retail spaces.

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[19] ISCA website at: https://www.isca.org.au/Get-Involved/IS-Ratings
[20] Frontier, 2020 unpublished, p.8
[21] https://new.gbca.org.au/.

There are other rating tools such as the National Australian Built Environment Rating System (NABERS) and the Global Real Estate Sustainability Benchmark (GRESB) which are targeted at operational infrastructure assets. They are not able to do an assessment at the planning or implementation stage of a project.

NABERS rates the efficiency of the building once it is operational and compares the performance of a building to benchmarks that represent the performance of other similar buildings in the same location. It uses information such as energy and water bills, and waste consumption data from the last 12-months as the basis of the rating. This tool is targeted specifically at operational buildings rather than those at the planning stage and is usually used by commercial builds.

The ratings are from one star (poor) through to six stars (market leading) and are valid for 12 months. The ratings can be used in any State or Territory.

The GRESB infrastructure asset assessment compiles information on environmental, social and governance (ESG) performance and sustainability practices for infrastructure companies, funds and assets and then uses the information to create a benchmark for infrastructure assets. Through benchmarking against others in the same sector, areas for improvement can be identified.

The Assessment is broken into Management and Performance Components – while each component receives a separate score only organisations which submit both components will receive a GRESB score and rating.[22] The management component collects information at an organisational level, while the performance component analyses information collected at the asset level. Sectors include data, energy and water, social infrastructure, transport, network utilities, power generation (non-renewable and renewable) infrastructure and environmental services.

The Nationwide House Energy Rating Scheme (NatHERS) rates the energy efficiency of a residence based on its design. The star rating provides an estimate on the thermal comfort of the home, with a minimum rating of one star and a maximum of ten stars.[23] Under the National Construction Code new builds or major renovations are required to mean minimum building energy efficiency requirements – and NatHERS can provide advice on how to improve efficiency. The scheme is limited to housing.

Frontier's assessment that ISCA's Sustainability Rating tool is the most suitable for infrastructure planning appears to generally accepted by industry stakeholders but it is also noted that there are other tools that can be drawn upon at different sectors or particular project types.

- While there are a number of assessment tools available, the ISCA tool provides two distinct advantages over many other tools: the ISCA tool is suitable for the assessment of a broad range of infrastructure projects, and is not specific to a single asset type. In contrast many other tools are relevant to a single asset type (such as NABERS and NatHERs tools are relevant only to buildings); and

[22] https://gresb.com/infrastructure-asset-assessment/
[23] https://www.nathers.gov.au/about

- the ISCA tool can be used for all three phases of infrastructure assessment, while some other tools are designed for use at a particular phase of the project.

We also note that that there are some areas of infrastructure that have more advanced processes and guidance for including sustainability assessments and have included a selection of these in the comparative analysis. One sector that has had to do this explicitly is the waste sector whereby the need to increase sustainability in the industry has become a requirement. This is further explained in Box 1.

Box 1: Waste and Resource Recovery Infrastructure Plans

The waste sector has evolved significantly over the last 30- years in response to market failures and opportunities. Critical examples include:

- The increasing cost and limited land available for new landfills which stimulated the need for better alternatives
- The requirement for greater separation of materials to improve the capacity to recycle waste streams, and
- Bans on waste exports and waste stockpiling which require new domestic market opportunities to better manage and maintain.

Since the responsibility for waste management lies with Local Government, they have traditionally been at the forefront of innovation in the sector. However, State Government has taken an increasingly growing role in facilitating the direction of the waste market through research and investment to improve how the private market manages waste. The end result has been a shift towards a more sustainable sector that is more heavily focused on waste reduction and recycling, rather than the dump and forget attitude of old.

Today, all states have a waste and resource recovery strategy, and many have a waste infrastructure plan which provides specific guidance for decision makers in regard to what waste projects are prioritised as a result of the environmental, social and economic goals of the program.

Sustainability is now at the heart of waste management, as seen in the National Waste Policy – Less waste, more resources (2018). It is understood that improving waste management is good for environmental, social, health and economic outcomes by moving towards a more circular economy style where less waste is produced and more can be recycled. This provides a strong indication to the market and other sectors that sustainability is at the heart of the future direction.

Some states have prepared Waste Infrastructure Plans, as they have identified key gaps in the market structure that prevent the efficient collection, processing and disposal of recyclates and waste products – which would have a suitable customer.

3.3.2 New South Wales

An assessment of NSW's use of guidance and tools for each of the three phases of infrastructure assessment are set out in Table 10.

Table 10: NSW – Infrastructure guidance and tools to assess sustainability

	Guidance	Tools	Comments
Shortlisting & selecting projects on a Triple Bottom Line basis	NSW Treasury also has a 7 step Gateway review process (TPP 17-01) to assess the robustness of project proposals. The process does not currently build sustainability and triple bottom line assessment into the selection of options, beyond an economic assessment as part of the Business case process (Gate 3). However NSW Treasury have released draft Guidelines for Resilience in Infrastructure Planning: Natural Hazards which outlines how resilience should be considered through the business case guidelines stage (TPP18-06). • Transport for NSW Sustainable design guidelines (2014) which aim to meet the Transport for NSW Environment and Sustainability Policy key aims. • Department of Education has an Environmental Education Policy for Schools guidelines and implementation strategy to assist schools implementing these principles for education and management purposes following the ISO 14001 international environmental standard.	• Business case templates provided by INSW and NSW Treasury with guidance on which is appropriate at which phase of the Project Development Process provided by INSW.	Key points: Triple bottom line taken into account for large, state significant projects through INSW. Triple Bottom Line is next considered in the economic assessment as part of a Business Case. The exception is for projects that meet State Priorities related to Environment, Social and Economic performance which are put forward and reviewed on that basis in the Problem definition phase.
Managing and minimising environmental and	DPIE is reviewing its Environmental Impact Assessment (EIA) and current guidance on Preparing and	• NSW EPA is required by law to maintain several public registers that assist in	

	Guidance	Tools	Comments
social impacts of selected projects	Environmental Impact Statement (EIS) – Draft (2017) is available. The EIS documents the social and environment impact and mitigation measures of a project as well as being used to inform initial approvals. NSW EPA is primarily responsible for managing and minimising impacts of projects as outlined in the EPA Compliance Policy (2013). Tools used to achieve this include education, economic mechanisms, compliance and enforcement programs. NSW EPA administers at least 12 legislations which has associated regulated. (EPA, 2013, 2). • Transport for NSW Sustainable design guidelines (2014) which aim to meet the Transport for NSW Environment and Sustainability Policy key aims. • Department of Education has an Environmental Education Policy for Schools guidelines and implementation strategy to assist schools implementing these principles for education and management purposes following the ISO 14001 international environmental standard.	managing the impacts of projects, predominantly environmental impacts. • NSW EPA Risk assessment tool used to understand environmental risks. • Transport for NSW Carbon Estimate and Reporting Tool SD-100 for measurement and reporting on GHG emissions.	
Review of implemented projects. Comparison of *As designed* to *As constructed* and operated	Infrastructure Investor Assurance Framework is applied to projects with a value of $10 million and above (INSW,2020). Risk-based approach which includes assurance reviews, project reporting, independent monitoring and improving outcomes. In Gates 1-6 Assurance reviewers assess progress of projects against	• Evaluation Toolkit for NSW Government program evaluation.	Minimal project-based review available and not completed rigorously.

	Guidance	Tools	Comments
	seven Key Focus Areas, one of which is Social, economic and environmental sustainability. Department of Premier and Cabinet have NSW Government Program Evaluation Guidelines (2016) for reviews of NSW Government funded programs. An Economic evaluation is recommended to identify, measure and value a programs economic costs and benefits including economic, social or environmental value. The Post Implementation Review Guideline TAM04-11 (NSW Treasury, 2004) provides guidance on project review, and notes the challenges of complementing these reviews. The assessment checklist considers the environment effects of projects but makes no reference to social outcomes or sustainability outcomes.		

3.3.3 Victoria

An assessment of Victoria's use of guidance and tools for each of the three phases of infrastructure assessment are set out in Table 11.

Table 11: Victoria – Infrastructure guidance and tools to assess sustainability

	Guidance	Tools	Comments
Shortlisting & selecting projects on a Triple Bottom Line basis	• The Victorian Department of Treasury and Finance has a Gateway review process for infrastructure investment but is only applicable for High Value or High Risk projects AND does not provide guidance on selecting projects based on sustainability principles. • Gate 2 of the above assessment, Business Case, does consider whether the preferred infrastructure option has taken account of relevant impact assessment and appraisal issues such as sustainable development and environmental effects, but is not a fundamental decision making point.	• No tools were identified	We note Victoria has a large number of policies and guidelines in development, following the new direction set by the SIS. Further advice may come into effect for infrastructure sectors as an outcome of this process.
Managing and minimising environmental and social impacts of selected projects	• The Department of Sustainability and Environment produced Ministerial guidelines for assessment of environmental effects under the Environment Effects Act 1978 (2006) which outlines when an Environmental Effects Statement needs to be produced and provides guidance on managing potential environmental, economic and social effects of projects. • Environment Protection Amendment Act 2018, which is intended to come into force from July 2021, will increase management of environmental and health impacts of projects. The Compliance and enforcement Draft policy outlines how the EPA Victoria manages environmental risks. • Department of Health Guidelines for sustainability in health care capital works (2010) provides guidance about how sustainability can	• ResourceSmart schools program	

	Guidance	Tools	Comments
	be embedded into health care capital works and how this can be managed and monitored. • Department of Education provide guidance to schools on reducing their environmental impact when planning new facilities in regard to design and management.		
Review of implemented projects. Comparison of *As designed* to *As constructed* and operated	Project review is the final stage of the Gateway process for High Value or High Risk projects, Stage 5: Realise of the investment lifecycle and Stage 6: Benefits realisation. These stages have multiple goals but are critical to determining whether the costs and benefits from a social, environmental and economic standing have been realised. The challenges of these types of reviews are noted.	• No tools were identified	

3.3.4 Queensland

An assessment of Queensland's use of guidance and tools for each of the three phases of infrastructure assessment are set out in Table 12.

Table 12: Queensland – Infrastructure guidance and tools to assess sustainability

	Guidance	Tools	Comments
Shortlisting & selecting projects on a Triple Bottom Line basis	• Building Queensland's Business Case Development framework sits on the foundations of the Queensland Government's Project Assessment Framework. The importance of social, environmental and economic benefit and sustainability is taken into account in Stage 2 where options are assessed rather then at the initial shortlisting stage. The framework has only been in place since 2015 and was under review in 2019 (Report 14, 2020). • The Stage 2 Options assessment includes a sustainability assessment for proposals with a capital value of more than $100 million which clearly outlines the sustainability principles for buildings and linear infrastructure.	• Sustainability Assessment Template provided in Stage 3: Detailed Business Case as part of the framework (pg 78).	Only state that actively incorporates sustainability in its full definition into the process.
Managing and minimising environmental and social impacts of selected projects	• Environmental Impact Statement process designed to avoid, minimise and/or offset the potential environmental, economic and social impacts of a project. Guidance provided on regulatory requirements of the EIS as well as targeted guidance (Water, Climate, Land, Ecology, Coastal, Air, Cultural Heritage and others) • The QLD *Environmental Protection Act 1994* is administered by the states environmental regulator, the Department of Environment and Science. A series of compliance guidelines are published to inform industry about managing the environmental impacts of projects.	• No tools were identified	

	Guidance	Tools	Comments
Review of implemented projects. Comparison of *As designed* to *As constructed* and operated	Queensland Treasury have published a project Assessment Framework (2015) which includes Post Implementation Review. If an economic review is done, whether costs and benefits are achieved and what led to variation from the estimates is examined.	• No tools were identified	

3.3.5 South Australia

An assessment of South Australia's use of guidance and tools for each of the three phases of infrastructure assessment are set out in Table 13.

Table 13: South Australia – Infrastructure guidance and tools to assess sustainability

	Guidance	Tools	Comments
Shortlisting & selecting projects on a Triple Bottom Line basis	South Australia's 20 year State Infrastructure Strategy outlines the importance of preserving South Australia's unique natural environment, resources and reputation for being clean and green into the future. SA's Construction Procurement Policy Project Implementation Process is produced by the Department of Planning, Transport and Infrastructure (DPTI). This framework guides the development and delivery of infrastructure proposals and requires a business case to be completed. Guidelines for the evaluation of public sector initiatives produced by DTF state that a business case (Gateway 3) includes a socioeconomic evaluation. Socioeconomic costs and benefits are not mentioned in relation to the investment proposal relevant in earlier Gateways. In achieving Gateway 3 the proposed project must satisfy the requirement for it to provide benefits to Government and the community and to be robust in regard to a triple bottom line approach to meet economic, environmental and social objectives. The Infrastructure SA Assurance Framework (ISAAF) is a risk-based assurance process focussed on investor assurance. It applies to infrastructure projects costing over $50 million; projects of certain ranking using the project risk level calculator; new infrastructure programs with an estimated capital cost of $50 million, or as directed by the Premier.	The risk evaluation tool criteria within the ISAAF weights the Environmental and Sustainability complexity risk at 10%. This criteria captures the extent to which successful delivery may be impacted due to issues related to climate change and sustainability.	

	Guidance	Tools	Comments
	https://www.dpti.sa.gov.au/__data/assets/pdf_file/0005/157838/Construction_Procurement_Policy_-_Project_Implementation_Process_2015_po38.pdf https://www.infrastructure.sa.gov.au/__data/assets/pdf_file/0006/197511/20-Year-State-Infrastructure-Strategy-Full.pdf https://www.infrastructure.sa.gov.au/__data/assets/pdf_file/0016/151432/ISA-Assurance-Framework.pdf		
Managing and minimising environmental and social impacts of selected projects	The South Australian *Environment Protection Act 1993* outlines considerations for the environment. The Planning, Development and Infrastructure Act 2016, due to come into force in March 2021, outlines the principles of good planning which include sustainability principles and highlight the importance of achieving energy efficient urban environments that address the impacts of climate change and promoting sustainable resource use, reuse and renewal. DPTI website includes links to many guidelines and tools relating to the environment. A key feature of the project implementation process is to ensure projects are consistent with the State's strategic directions. For Strategically important projects, Cabinet requires lead minister to ensure Government's objectives and strategies are met. In addition to regulatory tools, South Australia has a number of strategic and policy documents that support sustainability and climate change objectives. The Climate Change Action Plan claims that to support a strong, climate smart economy, the	The Office for Design and Architecture set out their Principles of Good Design which include sustainability. The ODASA develop and implement guidelines for resilient buildings. https://www.odasa.sa.gov.au/wp-content/uploads/ODASA-Principles-of-Good-Design_2019-Update_WEB-FINAL.pdf The Directions for a Climate Smart South Australia policy statement sets the government's agenda to address climate related impacts. It discusses climate change risk, for example in the form of greater costs due to storm damage and opportunities in terms of transport and renewable energy. Direction 5 is government leading by example by embedding climate smart	South Australia's Public Service values include sustainability. It requires they 'design structures, systems and services to consume resources more efficiently over time'. South Australia is an early adopter in terms of sustainability and climate change objectives, for example in 2015 it was the first Australian State to adopt a target of net zero emissions by 2050. https://reneweconomy.com.au/south-australia-commits-to-zero-net-emissions-by-2050-70525/

	Guidance	Tools	Comments
	South Australian government will integrate climate change considerations into its economic policies, including its Growth State Plan. https://www.legislation.sa.gov.au/LZ/C/A/PLANNING%20DEVELOPMENT%20AND%20INFRASTRUCTURE%20ACT%202016/CURRENT/2016.14.AUTH.PDF https://www.dpti.sa.gov.au/documents/environment?result_40034_result_page=1 https://www.environment.sa.gov.au/topics/climate-change/climate-smart-sa	thinking within planning systems, strategic decision making and operational arrangements. For example, by ensuring public infrastructure decisions consider and address climate risks and increasing efforts to reduce government greenhouse gas emissions. https://www.environment.sa.gov.au/topics/climate-change/climate-smart-sa	
Review of implemented projects. Comparison of *As designed* to *As constructed* and operated	The review stage (Gateway 5) of infrastructure projects is covered by DPTI's Construction Procurement Policy Project Implementation Process. The intent of step 5.6 of this process is to develop design, construction and market intelligence to benefit future projects and includes monitoring the performance of the asset, generally for 12 months, and making adjustments as required in response to end user issues. Where the project design involved sustainability and climate change benefits, or features to manage impacts, these should be reviewed in this stage, although this is not explicitly stated. https://www.dpti.sa.gov.au/__data/assets/pdf_file/0005/157838/Construction_Procurement_Policy_-_Project_Implementation_Process_2015_po38.pdf https://www.treasury.sa.gov.au/__data/assets/pdf_file/0018/36315/ti17-guidelines-part-a.pdf		

3.4 Findings

Sustainability is commonly defined as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. A Triple Bottom Line assessment has historically been the standard approach to measuring sustainability, however the definition and assessment is evolving and will continue to evolve as our understanding develops.

A thorough process to ensuring sustainability is a key part of infrastructure planning should be undertaken at three different phases of the project:

1. Shortlisting and selecting projects on a Triple Bottom Line basis
2. Managing and minimising environmental and social impacts of selected infrastructure
3. Reviewing implemented projects to ensure outcomes meet objectives.

- Our jurisdictional review found that Queensland has integrated sustainability most explicitly into its analytical framework. They are the only state to build a separate sustainability assessment into the business case process that goes beyond direct social and environmental costs and benefits of a project and expands into a broader definition of sustainability with considerations of heritage and culture, employment and governance, amongst others. However, only high value projects are required to undertake this assessment.
- Most states have clear guidelines and tools for managing and minimising the impact of infrastructure with respect to the environment, but this does not extend to other key sustainability themes such as social and cultural sustainability. This is the same for sector-based guidelines applied in some sectors such as transport, health and education.
- The Infrastructure Sustainability Council of Australia has produced sustainability rating tools that are incorporated into state specific sector reporting requirements, or in the overall assessment framework in the case of Queensland. The tool is applied in Western Australia's Transport Portfolio.
- While we have not undertaken a complete review of Sustainability tools used in other countries, it is our view that a consistent approach to reporting and assessment is good practice. While the ISCA tool may have limitations, it is the best tool available to the WA Government at present and is the tool which appears most likely to feature in future Federal based assessment frameworks.

3.5 Recommendations

Drawing on the earlier discussion and state reviews, Table 14 provides recommendations on improving infrastructure sustainability practices in Western Australia in line with good practice in Australia and internationally.

Table 14: Recommendations on infrastructure sustainability assessment and reporting

Recommendation 1 **Sustainability assessment of infrastructure projects**	**Recommendation 2** **Sustainability reporting**
The Government should look at incorporating sustainability assessment into its infrastructure project assessment framework covering: • shortlisting of projects and project selection; • managing and minimising environmental and social impacts of selected projects; and • review of implemented projects to ensure outcomes meet objectives. The (Infrastructure Sustainability Council of Australia) ISCA sustainability rating tool appears to be a good starting point for this. A tiered process (as described above) appears a suitable way of minimising the costs and maximising the benefits of incorporating this requirement.	IWA should consider including sustainability reporting as part of its annual reporting processes. Reporting should be consistent with the global standards for sustainability reporting produced by the Global Reporting Initiative (GRI)[24]. IWA should also consider including, as part of its sustainability reporting, disclosures on the financial risks of climate change, consistent with the recommendations of the Taskforce on Climate-Related Financial Disclosures (TCFD)[25].

[24] See https://www.globalreporting.org/standards/
[25] See https://www.fsb-tcfd.org/publications/

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