1. Sustainability Commitment

The Department of Planning, Transport and Infrastructure is committed to delivering effective planning policy, transport, infrastructure and programs in a manner that balances economic, environmental and social needs. In doing this the department will seek to minimise the impacts of its activities on, and where practicable enhance, the environment, and deliver lasting benefits to the community.

The department will work to achieve these objectives by:

• Promoting the efficient movement of goods and services across the transport network
• Encouraging and facilitating modal shift away from low occupancy private car use towards sustainable active transport alternatives such as cycling, walking and by providing appealing (flexible, convenient, safe, reliable, efficient and integrated) public transport solutions
• Taking a strategic and long-term view when planning infrastructure and services, considering whole-of-life impacts and seeking to create lasting benefits for the community
• Promoting sustainable urban development that reduces demand for non-renewable resources
• Assessing environmental and climate change risks and implementing appropriate adaptation and mitigation actions
• Using the department’s procurement power and processes to drive innovation and improve sustainability performance in supply networks
• Raising the awareness and capacity of the department’s staff to integrate sustainability principles into core business activities, including investment planning processes
• Reviewing the sustainability of the department’s operations (including efficient use of energy, water and building materials) and implementing cost-effective improvements
• Engaging effectively with local communities and relevant stakeholders
• Continually improving departmental work practices and striving to achieve best practice in environmental management and sustainability by setting targets and monitoring and benchmarking the department’s performance against recognised industry standards

This Manual outlines the framework and tools for sustainable decision making (summarised in Figure 1), and describes specific requirements for investigating and implementing initiatives to improve the sustainability of assets during the planning, design, construction and maintenance phases.
Figure 1  Steps and tools applied through planning, design, delivery and maintenance phases to address sustainability risks and opportunities

<table>
<thead>
<tr>
<th>PROJECT PHASE</th>
<th>RELEVANT STEPS/TOOLS</th>
<th>SUSTAINABILITY MANUAL REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Options phase</td>
<td>Options assessment</td>
<td>BPMOF-1.3 (Benefits Realisation Management Framework guidelines) requires preparation of benefits realisation strategy and benefits map</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PC-PL7 (Economic Evaluation and Business Case) includes requirements to perform a Strategic Merit Test, Rapid and Detailed Cost Benefit Analysis using Australian Transport Assessment and Planning (ATAP) Guidelines and Infrastructure Australia Assessment Framework.</td>
</tr>
<tr>
<td></td>
<td>Establishing business requirements</td>
<td>Guidance/ tool yet to be developed</td>
</tr>
<tr>
<td></td>
<td>Planning phase impact assessment</td>
<td>PC-PL2 (Planning Investigations) includes requirements to: (a) assess climate change risks and adaptation options (b) assess opportunities for the project to integrate Green Infrastructure (including Water Sensitive Urban Design (WSUD)) (c) undertake environmental impact assessment (d) facilitate an integrated and sustainable approach to transport and movement (e.g. by delivering improved active transport infrastructure, reducing physical or perceived barriers for walkable connections, improving user experience and access to public transport).</td>
</tr>
<tr>
<td></td>
<td>Concept design development</td>
<td>Transport Planning specifications require investigation of economic development opportunities/ constraints (eg property values, tourism and opportunities for business/ industry and trade), as well as consideration of impacts on property owners/occupants (eg property viability, impact on livelihood).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community engagement is guided by the DPTI Community Engagement Toolkit, which draws on the ‘Better Together: Principles of Engagement’, and PC-CS1 (Community and Stakeholder Engagement) which specifies the requirements for undertaking stakeholder and community engagement processes</td>
</tr>
<tr>
<td></td>
<td>Approvals and acquisition planning</td>
<td>Department of Premier and Cabinet PC015 requires submissions to PWC to demonstrate how the work incorporates sustainable development technology (for projects over $4m). Cabinet submissions (for projects over $15m) must include an environmental and social impact assessment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Potential sustainability impacts must be assessed during acquisition planning to inform appropriate procurement actions/ contract inclusions.</td>
</tr>
</tbody>
</table>

GUIDANCE/ TOOL YET TO BE DEVELOPED

- Consider the option/ initiatives’ alignment with sustainability benefits, policy objectives, plans, internal and external programs. Ensure all material externalities, (including social and environmental impacts) are appropriately accounted for in the cost benefit analysis.

- Ensure sustainability outcomes and benefits are adequately addressed in the project or program’s business requirements. This must include social, environmental and economic outcomes.

- Ensure environmental assessment addresses opportunities to deliver positive social, economic and environmental outcomes (beyond mitigation).

- Flag where the most significant sustainability risks and opportunities lie, and suggest minimum requirements and initiatives for the design phase. Ensure any sustainability opportunities and mitigation measures identified during the planning phase are reflected in the Concept Design.

- Potential sustainability impacts must be assessed during acquisition planning to inform appropriate procurement actions/ contract inclusions.
**Design phase**

Ensure effort is focussed on the areas of greatest risk, sustainability opportunities are investigated thoroughly and the best initiatives are progressed.

PC-ST1 (Sustainability in Design) includes requirements for:
(a) applying the waste hierarchy
(b) practising socially sustainable procurement
(c) obtaining an IS Rating (where applicable)
(d) achieving (and nominating higher) Minimum Sustainability Requirements
(e) addressing sustainability in the Design Management Plan
(f) estimating greenhouse gas emissions, water use, waste generation and materials lifecycle impacts
(g) identifying and implementing sustainability initiatives

The Landscaping specifications include requirements to enhance the amenity of project sites with urban design and landscaping.

PC-ENV1 (Environmental Management) and PC-ENV2 (Environmental Protection), establish the requirements for Contractors’ environmental management systems and environmental protection/mitigation measures.

**Construction phase**

Ensure effort is focussed on the areas of greatest risk, sustainability opportunities are investigated thoroughly and the best initiatives are progressed.

PC-ST2 (Sustainability in Construction) includes requirements for:
(a) sustainable site accommodation and equipment
(b) applying the waste hierarchy
(c) practising socially sustainable procurement
(d) obtaining an IS Rating (where applicable)
(e) achieving (and nominating higher) Minimum Sustainability Requirements
(f) addressing sustainability in the Construction Management Plan
(g) estimating greenhouse gas emissions, water use, waste generation and materials lifecycle impacts
(h) identifying and implementing sustainability initiatives

PC-ENV3 (Environmental Design), PC-ENV4 – Noise Assessment and Treatment Implementation, RD-DK-D1 (Road Drainage) and PC-SI2 (Site Investigations) establish the requirements for assessing and managing environmental impacts including vegetation, fauna, air quality, noise, water quality and site contamination.

PC-H1 (Aboriginal Heritage & Native Title) includes requirements to avoid damage, disturbance to Aboriginal sites, objects or remains. PC-H2 (Non-Aboriginal Heritage) includes requirements to assess and appropriately manage impacts to heritage listed sites

Department of Industry and Skills’ ‘Skilling South Australia’ procurement guideline, Economic Contribution Test and Industry Participation Plan requirements address local employment creation, skills development and opportunities for disadvantaged members of the community.

**Maintenance phase**

Ensure effort is focussed on the areas of greatest risk, sustainability opportunities are investigated thoroughly and the best initiatives are progressed.

Sustainability in Maintenance specification (yet to be completed) includes requirements for:
(a) achieving (and nominating higher) Minimum Sustainability Requirements
(b) addressing sustainability in the Maintenance Management Plan
(c) estimating greenhouse gas emissions, water use, waste generation and materials lifecycle impacts
(d) identifying and implementing sustainability initiatives
(e) practising socially sustainable procurement
(f) obtaining an IS Rating (where applicable)

Part 6, Part 7, Part 8, Part 9
2. Sustainability in options assessment and decision making

To achieve the department’s goal for sustainable infrastructure, investment and design decisions must be based on a robust triple bottom line assessment of options - both high level options (strategic options) and sub-options for delivery (project options).

For both strategic and project options, the department uses a tiered filtering approach, based on the Australian Transport Assessment and Planning Guidelines (Australian Government Department of Infrastructure and Regional Development, 2016) and the Infrastructure Australia Assessment Framework (2017). This involves a strategic merit test and cost benefit analysis.

**Strategic Merit Test**

The Strategic Merit Test must confirm that there is a clear link from strategy to project, i.e. the project is contributing to the department’s and the State Government’s broader vision, and complements other existing or planned projects/programs.

To effectively consider an option’s or initiative’s alignment with goals, objectives and strategic priorities, the Strategic Merit Test must be based on a multi-criteria assessment. This must be undertaken by a multi-disciplinary team including the following as a minimum:

- Environmental experts
- Social/community experts
- Business case experts
- Infrastructure experts

For sustainable decision making, it is important that criteria are weighted equally across economic, social and environmental aspects. Appendix 1 provides a list of sustainability policy objectives, plans, internal and external programs to consider when undertaking the Strategic Merit Test.

**Cost benefit analysis**

Cost benefit analyses undertaken for both the rapid and detailed appraisal must consider whole-of-life costs and benefits of the investment decision, including all material externalities arising from the option/initiative.

Materiality should be considered on a cumulative basis, for example if a project produces a small amount of noise pollution but is located in an area already subject to high noise levels, this externality may still be material.

The Infrastructure Sustainability Rating Tool version 2.0 (ISCA 2018) identifies a number of externalities that may need to be considered when assessing infrastructure projects:

- Noise
- CO2-e emissions
- Human health impacts
- Air and water pollution
- Education and skills development
- Enhanced safety
- Aesthetics
- Productivity
- Biodiversity
- Land use changes and urban renewal
- Agglomeration economies

Where externalities are monetised, the source and rationale for the cost benchmarks must be explained and documented.

**Distributional impacts**

The impacts of a project are not always distributed evenly across society, i.e. some (demographic or geographic) groups may experience benefits while others may be negatively impacted.
Whilst it may be practical for the cost benefit analyses to focus on the net impacts of a project to the community as a whole, distributional impacts must be considered and addressed to ensure that the project doesn’t disproportionately impact certain social groups, especially disadvantaged or vulnerable groups.

The Infrastructure Sustainability Rating Tool version 2.0 (ISCA 2018) provides examples of common distributional impacts:

- Access to employment and services
- Infrastructure user costs
- Safety impacts
- Employment opportunities
- Increased costs to access infrastructure/services
- Physical accessibility
- Noise impacts
- Severance
- User benefits
- Business impacts

3. Benefits realisation and business requirements

The department’s benefits framework sets out the key outcomes and benefits that it wants to achieve through investment in infrastructure, services and planning. It includes several sustainability-related benefits, which relate to the department’s key areas of impact and influence, as well as broader Government direction and sustainability commitments.

The project/program must be assessed to check whether it will move the department closer towards or further away from its sustainability-related benefits. Any negative impacts must be carefully considered to ensure the full value of the program is recognised or remediation steps are put in place.

Sustainability outcomes and benefits are relevant to most projects/programs the department undertakes and should be reflected in the business requirements. Key business requirements relevant to sustainability are listed in Table 3.1. Proponents need to consider how the project can achieve these business requirements. Some examples of project-specific outcomes are provided, but the nature of the specific outcomes sought will depend on the priorities and opportunities presented by the project and how the project team wants to drive sustainability.

<table>
<thead>
<tr>
<th>Table 3.1</th>
<th>Key Sustainability Business Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Minimise the generation of greenhouse gases across the full asset lifecycle.</td>
</tr>
<tr>
<td></td>
<td><em>Example Project specific outcomes:</em></td>
</tr>
<tr>
<td></td>
<td>• Whole of life greenhouse gas emissions associated with the asset are at least x% lower than the estimate provided for the Project Reference Design.</td>
</tr>
<tr>
<td>2.</td>
<td>Apply the principles of the waste hierarchy (avoid, reduce, reuse, recycle and recover) to maximise waste avoidance and diversion from landfill.</td>
</tr>
<tr>
<td></td>
<td><em>Example Project specific outcomes:</em></td>
</tr>
<tr>
<td></td>
<td>• Maximise the use of recovered and recycled items/materials.</td>
</tr>
<tr>
<td></td>
<td>• x m² trial of asphalt containing recycled plastic and glass laid in [location]</td>
</tr>
<tr>
<td>3.</td>
<td>Protect and where possible enhance water quality, using WSUD principles</td>
</tr>
<tr>
<td></td>
<td><em>Example Project specific outcomes:</em></td>
</tr>
<tr>
<td></td>
<td>• Avoid/minimise project impacts/disturbance to xxxxxx receiving water bodies.</td>
</tr>
<tr>
<td></td>
<td>• Improve receiving water environmental values</td>
</tr>
<tr>
<td>4.</td>
<td>Minimise use of mains water across the full asset lifecycle through demand reduction, use of rainwater and recycled water.</td>
</tr>
<tr>
<td></td>
<td><em>Example Project specific outcomes:</em></td>
</tr>
<tr>
<td></td>
<td>• Landscaping that is self-sustaining avoiding ongoing irrigation or regular replanting.</td>
</tr>
<tr>
<td></td>
<td>• Utilisation of waste-water from [local industry] for construction purposes (where quality requirements can be met)</td>
</tr>
</tbody>
</table>
5. Avoid mobilisation of contaminants and where feasible, remediate contaminated land.

**Example Project specific outcomes:**
- Avoid/minimise disturbance to known and potential acid sulfate soils identified on drawing xxxx.

6. Minimise the destruction/disturbance of native flora and amenity vegetation and where possible improve biodiversity outcomes.

**Example Project specific outcomes:**
- Implement environmentally sustainable principles to minimise short and long-term environmental impacts.
- Improve biodiversity.

7. Enhance the amenity of project sites and surrounding areas with urban design and landscaping.

**Example Project specific outcomes:**
- A flexible and adaptable public space adjacent the station to facilitate transfers and connections between trains, transport modes and other local destinations.
- A station precinct that contributes and encourages the passive surveillance and activity of the platform.
- Improved safety and security of passengers, staff and the general public through maximising passive surveillance using Crime Prevention through Environmental Design (CPTED) principles.
- A public realm that is welcoming to all, inviting and safe, both day and night.
- Enhanced amenity through infrastructure that improves the social, functional and physical aspects of the site.
- Impacts to the surrounding precinct from noise, spilled light, air and visual pollution are mitigated.

8. Design assets to facilitate and encourage greater use of sustainable transport modes, including cycling, walking, public transport and low/zero emission vehicles.

**Example Project specific outcomes:**
- Reduce physical or perceived barriers for walkable connections to and from the xxxxx site.
- Integrate pedestrian connections to xxxxx.
- Reduced bus/train passenger transfer time & distance.
- Bicycle facilities, including storage are provided for more seamless bike to train transfer experience.
- Passenger’s in-vehicle journey travel time is reduced (as far as practical).
- Train passengers are be provided with real time information of service arrivals through public displays and continued innovations in data capture and mobile (smart) technology applications.
- During disruption to train services passengers are to be provided with an alternate services (e.g. substitute buses).
- Construction methodology should prioritise public transport travel time reliability during the construction phase.
- Enhanced and effective inter-modal connections for all commuters to public transport including pedestrians, cyclists and cars.
- Electric vehicle charging infrastructure at park and ride interchanges.

9. Contribute to improved community wellbeing by identifying and responding to community needs.

**Example Project specific outcomes:**
- Complement the outcomes sought in the xxxxx DPA.
- Equitable and accessible access for all, following principles of universal design.
10. Design assets to minimise future maintenance, repair, re-engineering and/or replacement costs, with consideration of future climate change impacts.

**Example Project specific outcomes:**
- Existing and new assets are rationalised and reduced to minimise maintenance intervention
- Infrastructure that can be sustained within the existing (or lower) operational budget and requires minimal ongoing maintenance
- Infrastructure that avoids litter traps, staining and the requirement for regular cleaning
- The operational life (design) of the infrastructure, equipment and materials are to be maximised, taking into account the future impact of climate change
- Equipment and materials that can be easily replaced (in the event of damage)
- Materials and surfaces with an integrated, enduring finish are prioritised
- Standardised road furniture types consistent with the existing road network

11. Conserve/enhance places of cultural value within and adjacent development sites.

**Example Project specific outcomes:**
- New infrastructure maintains and enriches the identity and character of the project impact area or site??
- Recognise, respect and preserve indigenous and non-indigenous cultural heritage
- Retain existing significant trees that enhance local amenity

12. Design and deliver projects or programs to facilitate private sector investment and contribute to local prosperity.

**Example Project specific outcomes:**
- Services provided to enable future commercial conveniences (e.g. “pop up” or small shops etc.)
- Enable and encourage future commercial and residential development adjacent the site
- The construction of the project must have minimal impact to adjacent business and community facilities
- Locally sourced or fabricated materials to support the local economy and minimise transport (where practical)
- The benefit to the South Australian economy and businesses is maximised

4. Use of the Infrastructure Sustainability Rating Tool and the DPTI Master Specification

The Infrastructure Sustainability Council of Australia (ISCA) is a member based, not-for-profit industry council established with the objective of advancing sustainability outcomes in infrastructure. The primary method to achieve this objective is through the development and application of the Infrastructure Sustainability (IS) rating scheme.
The purpose and benefits of the IS rating scheme include:

- Providing a common national language for sustainability in infrastructure, which makes it possible to benchmark against other projects (internal and external) and track progress against sustainability objectives;
- Providing a method for consistent application and evaluation of sustainability in tendering processes;
- Providing guidance in scoping whole-of-life sustainability risks and opportunities for projects and assets, enabling solutions to reduce risks and costs;
- Reducing costs by encouraging resource efficiency and waste reduction;
- Fostering innovation and continuous improvement in the sustainability outcomes from infrastructure, beyond business as usual;
- Providing independent verification, enabling simplified contract management; and
- Providing a means of incentivising and recognising good practice.

The IS rating tool is best suited to large projects. In determining which projects to apply the rating tool DPTI considers risk (political, social and environmental) as well as financial criteria, recognising that some high value projects are relatively low risk and offer limited scope for sustainability initiatives (e.g. some bundled projects), while some lower value but high risk projects may benefit greatly from going through the IS rating process (due to the strong emphasis on options assessment and triple-bottom-line decision making). It is intended that all Category 1 (High Value, High Risk) projects with a capital expenditure over $50m be registered for IS Planning, Design and As Built ratings. The requirement for an IS rating will be specified in the contract documents.

Projects which do not meet these criteria will generally be subject to the relevant sustainability parts of the Master Specification (i.e. PC-PL3, PC-ST1 and PC-ST2), which incorporate requirements for:

- sustainable site accommodation and equipment;
- application of the waste hierarchy;
- socially sustainable procurement;
- estimating greenhouse, water, waste and material lifecycle impacts and identifying and implementing feasible initiatives to deliver improved sustainability outcomes.

The full suite of requirements will generally apply to all infrastructure projects which require assessment by the Public Works Committee (PWC) of Parliament, with any exceptions being specified in the contract documents.

Projects which do not require assessment by the PWC will generally be subject to reduced requirements in the sustainability parts of the Master Specification. Requirements to estimate impacts, identify and implement sustainability initiatives and develop a sustainability plan will generally not apply, as specified in the contract documents.

For projects undergoing an IS rating, the contract will specify a minimum rating or score that must be achieved. This will form one of the Minimum Sustainability Requirements. Contractors may wish to nominate a higher score (and any additional costs associated with this) in their Sustainability Returnable Schedule, which will be considered during tender assessment.

Category 1 projects which are intended to be registered for an IS Design and As Built rating may not always undergo an IS Planning rating. In these instances it is important that Planning Investigations are undertaken in such a way that facilitates the achievement of IS Design credits during the design phase. Many IS credits allow investigations undertaken during the planning phase to be submitted as evidence for the design rating, provided they meet the specific credit requirements. For example in order for a climate change risk assessment to satisfy ISv2.0 Design Res-2 credit, it must have been undertaken by a multi-disciplinary team, with the involvement of a suitably qualified person with minimum 3 years experience in natural hazard and/or climate change treatments options and treatments. In order to facilitate achievement of this credit during the design phase, attendance lists should be kept, along with the CV of the suitably qualified person. If planning investigations are undertaken without having regard to IS credit requirements, there is a risk that work will have to be re-done, or credits forfeited.
5. Sustainability Plans and Progress Reports

Where required in the contract, a Preliminary and/or Final Sustainability Plan must be prepared for all project phases, to:

- provide an early indication of the most significant sustainability risks and opportunities for the project (through estimation of impacts);
- identify strategies and opportunities to mitigate sustainability risks/ improve sustainability outcomes;
- document the findings and outcomes of investigations/evaluation, including costs/ benefits, potential barriers to implementation, how the initiatives will or have been evaluated, and justification for decisions to implement or not implement identified initiatives.

5.1 Planning phase

Only a Final Sustainability Plan is required for the planning phase. This must provide a summary of the most significant sustainability risks/ impacts and opportunities associated with the project, and must include, as a minimum:

- High level estimates of whole of life greenhouse gas emissions, waste volumes, water use and materials lifecycle impacts of the preferred concept design, prepared in accordance with DPTI Sustainability Manual part 6;
- Suggested sustainability initiatives for the design and construction of the asset, prepared in accordance with DPTI Sustainability Manual part 7.1;
- Suggested Minimum Sustainability Requirements for the design and construction of the asset, developed in accordance with DPTI Sustainability Manual part 7.1;
- Outcomes of any Sustainability Impact Assessment undertaken during Acquisition Planning.

5.2 Design, construction and maintenance phase

The Preliminary Sustainability Plan is prepared early in each project phase to show where the key sustainability impacts/risks lie, and identify the opportunities that the project team intends to investigate/ implement to mitigate the impacts and achieve the Minimum Sustainability Requirements. Where a Preliminary Sustainability Plan is required in the contract, this must include:

- the Minimum Sustainability Requirements agreed for the project/ asset/ maintenance program, and how they will be achieved
- the outcomes of investigations and actions taken to maximise use of sustainable materials and apply the waste hierarchy;
- actions implemented to reduce environmental and community/ workforce health impacts of vehicles, plant and equipment emissions;
- initial estimates for whole of life greenhouse gas emissions, waste volumes, water use and materials lifecycle impacts (as required by the relevant Sustainability part of the Master Specification)
- details of all discretionary and non-discretionary sustainability initiatives identified (current at the time of submitting the Plan), including the outcomes of any investigations undertaken.\(^1\)

\(^1\) DPTI Sustainability Manual part 8 describes the information that must be recorded for each sustainability initiative. It is not expected that the Preliminary Sustainability Plan contains complete information for all initiatives. Rather, it should contain as much information as possible for those initiatives that have been identified and investigated as at the time of submitting the plan. Complete information must be provided in the Final Sustainability Plan.
Sustainability Manual

- the Contractor’s commitment to address sustainability risks and opportunities in the supply chain
- all material social sustainability risks and opportunities identified in the project/ asset/ maintenance program’s supply chains, and the procurement actions that will/ have been taken to mitigate these risks/ realise these opportunities.

Throughout the works, as opportunities are identified, investigated and evaluated, information on the status of initiatives and progress against the Minimum Sustainability Requirements is reported via a 6-monthly Sustainability Progress Report. The Sustainability Progress Report must include:

- an indication of current status for each Sustainability Minimum Requirement (e.g. on-track to being achieved with proposed initiatives, additional initiatives still required to achieve minimum requirement)
- a summary of the sustainability initiatives identified/ investigated by the Contractor, outcomes of investigations undertaken, details of which initiatives were/ were not implemented and the rationale

A suggested format is provided in Appendix 3.

At the end of each project phase a Final Sustainability Plan is submitted, which includes final details of all sustainability initiatives identified and investigated by the project team as well as details of which opportunities were/ were not implemented and the rationale. This will be made available to project teams undertaking the next phase. Where a Final Sustainability Plan is required in the contract, this must include:

- the Minimum Sustainability Requirements agreed for the project/ asset/ maintenance program
- the outcomes of investigations and actions taken to maximise use of sustainable materials and apply the waste hierarchy;
- actions implemented to reduce environmental and community/ workforce health impacts of vehicles, plant and equipment emissions;
- final estimates for whole of life greenhouse gas emissions, waste volumes, water use and materials lifecycle impacts (as required by the relevant Sustainability part of the Master Specification)
- details of all discretionary and non-discretionary sustainability initiatives identified, including:
  - the outcomes of any investigations undertaken (in accordance with DPTI Sustainability Manual part 8),
  - confirmation of which initiatives were/ were not implemented and the rationale, and
  - verification of estimated costs and benefits (i.e. implementation costs and reductions/improvements achieved for each initiative)
- the project team’s commitment to address sustainability risks and opportunities in the supply chain
- all material social sustainability risks and opportunities identified in the project/ asset/ maintenance program’s supply chains, and the procurement actions taken to mitigate these risks/ realise these opportunities.

There is no minimum number of sustainability initiatives (beyond the Principal-nominated sustainability initiatives) that must be investigated or implemented by the project team – it will vary between projects. However, it is expected that initiatives are investigated for all significant impacts. The time allocated to investigating initiatives should also be proportionate to the scale of the impact. For example, if the largest sources of greenhouse emissions are from the production of concrete and steel, then there should be more focus on investigating strategies to reduce emissions from these materials than from other, less significant sources.

The Sustainability Plans and Progress Reports must be submitted to the Principal in accordance with Table 5.1.
Table 5.1  Timing for submission of Sustainability Plans and Sustainability Progress Reports

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Initial submission</th>
<th>Interim</th>
<th>Final submission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning phase</td>
<td>n/a</td>
<td>n/a</td>
<td>Upon completion of the planning study</td>
</tr>
<tr>
<td>Design phase</td>
<td>30% design</td>
<td>Sustainability Progress</td>
<td>100% design</td>
</tr>
<tr>
<td>Construction phase</td>
<td>Within 1 month of</td>
<td>Reports must be submitted on</td>
<td>At the time of submitting as built</td>
</tr>
<tr>
<td></td>
<td>Contract Award</td>
<td>a six-monthly basis unless</td>
<td>drawings and information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>otherwise agreed by the</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Principal</td>
<td></td>
</tr>
<tr>
<td>Maintenance phase</td>
<td>Within 1 month of</td>
<td></td>
<td>6 months prior to completion of the Maintenance</td>
</tr>
<tr>
<td></td>
<td>Contract Award</td>
<td></td>
<td>program</td>
</tr>
</tbody>
</table>

5.3 ESD report for Public Works Committee and Cabinet submissions

Where required in the contract, an ESD report must be prepared for the purpose of complying with requirements of Cabinet and the Public Works Committee (PWC) of Parliament.

In line with section 16A of the Parliamentary Committees Act, all public works with a capital value greater than $4 million must be considered by the Public Works Committee (PWC) of Parliament. In addition, public works greater than $15m must be considered by Cabinet.

Premier and Cabinet Circular DPC15 requires that submissions to PWC demonstrate how the work incorporates ecologically sustainable development (ESD) technology. The ESD section of the submission must summarise they key ESD risks/impacts and opportunities associated with the project, and proposed strategies to mitigate/realise them. It must be accompanied by an acquittal from the Department of Environment and Water (DEW) confirming that they are satisfied with the extent to which the design of the work appropriately uses sustainable development technology. If the acquittal includes any recommendations regarding the incorporation of further sustainability features, the PWC submission should state whether these recommendations will/have been be adopted, and provide reasons if recommendations are not adopted in full.

In accordance with Cabinet Guide 5, Cabinet submissions should, where relevant, include an assessment of environmental impacts, based on the following Whole-of-Government principles:

- decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equity considerations
- a precautionary approach must be used to avoid threats of serious or irreversible environmental damage
- intergenerational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations, and
- the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

Cabinet submissions are routinely referred to all relevant agencies, including DEW, for comment. To enable DEW to assess the project (and provide an acquittal in the case of PWC submissions), sufficient information must be provided on the ESD risks/impacts and opportunities and proposed strategies to mitigate/realise them. This information should be provided in the form of an ESD report, and submitted to DEW’s Climate Change Unit (details below) for review. A 2 week period for comment is considered appropriate, but this should be confirmed with the nominated contact. For works being considered by Cabinet (ie works greater than $15m), the ESD report should also be referred to DEW’s Cabinet – Environment Impact comments coordinator.

A suggested format for the ESD report is provided in Appendix 2.

DEW Contact for PWC Comments: Diane Favier

DEW Contact for Cabinet Submission
6. Estimating impacts

Estimating greenhouse gas (GHG) emissions, water use, waste generation and materials lifecycle impacts across the life of the asset or maintenance program allows the project team to understand where the biggest impacts are. This information can then be used to help set appropriate minimum requirements and focus efforts on areas of greatest impact.

Estimates are generally required for all infrastructure projects where a submission to the Public Works Committee or Cabinet is required (refer to Part 5.3).

The boundary of the estimate will vary depending on when it is being undertaken in the asset lifecycle. The minimum requirements for each phase are shown in Table 5.1. Operational impacts shall be calculated over the forecast useful life of the asset, unless valid reasons are provided to justify a different period. Any alternative period must be clearly recorded in the Sustainability Plan.

It is acknowledged that estimates made during the planning phase will be high level estimates. However, these early estimates still provide an understanding of the relative impacts and implications of different options or materials, which can aid in decision making.

The level of detail should be sufficient to allow project teams to identify activities with high impacts and focus efforts on reducing impacts from these activities.

### Table 6.1 Project phase requirements for impact estimates

<table>
<thead>
<tr>
<th>Project phase</th>
<th>Boundary of impact estimate</th>
<th>When to prepare estimate(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Planning (Proving phase)</td>
<td>Impacts associated with construction and operation of the asset over its forecast useful life.</td>
<td>1. Must be based on shortlisted Concept designs and submitted with the Planning Study Report</td>
</tr>
<tr>
<td>Planning (Pre-delivery phase)</td>
<td>Impacts associated with construction and operation of the asset over its forecast useful life.</td>
<td>2. Must be based on the preferred concept design and submitted with Final Sustainability Plan.</td>
</tr>
</tbody>
</table>
| Design                               | Impacts associated with construction and operation of the asset over its forecast useful life. | 1. Preliminary design estimate:  
- may be based on reference design estimate prepared in the planning phase (if still relevant and sufficiently detailed)  
- must be prepared prior to the sustainability workshop and provided to workshop participants  
2. Final design estimate must be based on and submitted with 100% design |
| Construction                         | Impacts associated with construction of the asset                                              | 1. Preliminary construction estimate:  
- may be based on final design estimate prepared in the design phase (if still relevant and sufficiently detailed) |
Reference design estimates and preliminary design, construction and maintenance estimates must be based on ‘business as usual’ materials, technologies, construction and operation practices, which reflect standard practice for DPTI. Several business as usual assumptions are provided in Appendix 4.

### 6.1 Estimating greenhouse gas emissions

Estimates must be expressed in tCO2-e and shall cover Scope 1, Scope 2 and the following Scope 3 emissions as a minimum:

- Embodied emissions of purchased materials (e.g., quarry products, concrete, asphalt, steel);
- The extraction, production and transportation of purchased fuels;
- The transportation of purchased materials and waste;
- Disposal of waste;
- Emissions attributable to the electricity lost in delivery in the transmission and distribution network; and
- Combustion of fuel in third party vehicles using the infrastructure (only required for early planning phase estimates)

The approach to estimating emissions must be consistent with the current version of the Infrastructure Sustainability Council of Australia (ISCA) Energy and Carbon Guideline, with the exception that embodied emissions are to be included in the greenhouse gas emissions estimate.

### 6.2 Estimating waste volumes

Estimates must be expressed in tonnes or cubic metres and shall be provided for the following major waste streams as a minimum:

- Asphalt planings;
- Concrete;
- Waste soil;
- Metals;
- Plasterboard;

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2 The IS Energy and Carbon Guideline is based on the National Carbon Offset Standard (NCOS), but has been adapted to suit infrastructure projects and assets. It contains general principles and guidance, as well as specific documentation requirements for IS rating submissions. Where a project is not undergoing an IS Rating, it is not expected that estimates comply with all the specific documentation requirements for assessors. Rather, the approach to estimating emissions should be consistent with the carbon accounting principles and methods described in the Energy and Carbon Guideline.
(f) Organics;
(g) Plastics;
(h) Cardboard and paper

6.3 Estimating water use

Estimates must be expressed in ML, and must cover mains and non-mains water use for all significant end use categories. This may include:
(a) office and user/worker ablutions;
(b) dust suppression;
(c) subgrade stabilisation;
(d) moisture control of fills and pavement layers;
(e) wash down;
(f) on-site manufacture;
(g) landscaping;
(h) water line testing;
(i) equipment cooling; and
(j) cleaning.

6.4 Estimating materials’ lifecycle impacts

Estimates of materials’ lifecycle impacts must be prepared using the current version of the Infrastructure Sustainability Council of Australia (ISCA) Materials Calculator or other suitable lifecycle assessment tool. Any alternative lifecycle assessment tool must utilise lifecycle data sourced from the Australasian Life Cycle Inventory Database (AusLCI) and/or current Environmental Product Declarations that conform to standard EN 15804.

7. Minimum Sustainability Requirements

7.1 Setting Minimum Sustainability Requirements

The estimates prepared at Reference Design provide a benchmark and basis to set Minimum Sustainability Requirements for the asset. Minimum Sustainability Requirements will be specified in the Functional and Operational Requirements for the design and construction phase, and must:
(a) be reflective of the nature and scale of opportunities presented by the project;
(b) be based on credible evidence of the benefit/impact that can realistically be achieved;
(c) take into account any Principal-nominated sustainability initiatives to be specified in the Functional and Operational Requirements;
(d) be appropriate in terms of the likely cost associated with achieving the target.

The planning phase Sustainability Plan must include suggested Minimum Sustainability Requirements and sustainability initiatives for inclusion in the design phase. For projects that are going to be registered for an IS Design & As Built Rating, the suggested Minimum Sustainability Requirements must include a minimum IS Design rating and As Built rating, and suggested minimum levels to be achieved for individual credits.

The 2019 ‘Review of Emissions Reduction Opportunities’ (available on DPTI website) provides some information on the typical sources and comparative magnitude of GHG emissions for various
infrastructure types. It provides various initiatives’ emission reduction potential across the asset life cycle, and includes Marginal Abatement Cost Curves (MACC) to allow for comparison across initiative and assist in decision making.

7.2 Nominating higher Minimum Sustainability Requirements

The Contractor may nominate higher Minimum Sustainability Requirements at the time of submitting their tender, by filling out the relevant section in the Sustainability Returnable Schedule. This may be appropriate if the Contractor has identified (or is confident that they will be able to identify) initiatives that will allow them to exceed the specified Minimum Sustainability Requirements.

Note that:

- Principal nominated sustainability initiatives must be included in the Contract Sum

- If a contractor-nominated initiative is accepted by the Principal the Sustainability Minimum Requirement(s) for the project will be adjusted accordingly and the Contractor will be obliged to achieve the adjusted Sustainability Minimum Requirement(s).

- The Contractor is not expected to identify all sustainability initiatives at the time of submitting the returnable schedule. Further opportunities/initiatives will be identified during the design and construction process. However, the Contractor is encouraged to identify and include as many sustainability initiatives as practicable in the returnable schedule, as this enables them to be valued in the tender assessment process.

Table 7.1 shows an example of a Returnable Schedule with hypothetical initiatives.

A template is provided in Appendix 5.
### Table 7.1  Example Returnable Schedule

<table>
<thead>
<tr>
<th>Principal nominated sustainability initiatives</th>
<th>Contractor nominated sustainability initiatives</th>
<th>Anticipated benefit/ outcome</th>
<th>Included in Contract Sum (Yes/No)</th>
<th>Adjustment to Contract Sum if accepted</th>
<th>Adjustment to Sustainability Minimum Requirement(s) if accepted¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>50% SCM in all non-structural concrete ≤32MPa</td>
<td>Smart LED street lighting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Purchase of Green Power in site office for duration of contract</td>
<td>x tonnes CO2-e avoided</td>
<td>No</td>
<td>$ x</td>
<td>Increase construction phase emissions reduction requirement from x% to x%</td>
</tr>
<tr>
<td></td>
<td>Installation of PV system on site offices</td>
<td>x tonnes CO2-e avoided</td>
<td>No</td>
<td>$ x</td>
<td>Increase construction phase emissions reduction requirement from x% to x%</td>
</tr>
<tr>
<td></td>
<td>Use of LED lighting towers with solar/diesel hybrid generators for all night works</td>
<td>Saving of x kL diesel, equating to x x tonnes CO2-e Reduced noise impacts</td>
<td>Yes</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Use of chemical stabilisers for dust suppression (as a replacement for water carts)</td>
<td>Saving of x kL water Saving of x kL diesel, equating to x tonnes CO2-e</td>
<td>Yes</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Use of recycled water for construction activities and landscape irrigation (requires extension of &amp; connection to Council recycled water network)</td>
<td>Saving of x kL mains water during construction phase Annual saving of x kL mains water during operational phase</td>
<td>No</td>
<td>$ x</td>
<td>Increase construction phase potable water reduction requirement from x% to x%</td>
</tr>
<tr>
<td></td>
<td>Use of asphalt containing recycled soft plastics for x m² within car park</td>
<td>Recycling of x tonnes plastic</td>
<td>No</td>
<td>$ x</td>
<td>n/a (no minimum requirement specified for use of recycled content materials)</td>
</tr>
<tr>
<td></td>
<td>Use of pavement mixes which incorporate 20% recycled C&amp;D materials (in lieu of quarried materials)</td>
<td>Recycling of x tonnes C&amp;D materials</td>
<td>Yes</td>
<td>n/a</td>
<td>n/a (no minimum requirement specified for use of recycled content materials)</td>
</tr>
</tbody>
</table>

¹Sustainability initiatives nominated by the Contractor may present an opportunity to exceed the Minimum Sustainability Requirements set by the Principal in the Functional and Operational Requirements. In this case the Contractor may choose to nominate higher Minimum Sustainability Requirements. If the initiative is accepted by the Principal the sustainability target(s) for the project will be adjusted accordingly and the Contractor will be obliged to achieve the higher Minimum Sustainability Requirement(s).
8.  Identifying initiatives to reduce GHG emissions, waste, water and materials’ lifecycle impacts

Project teams may be required to identify initiatives to reduce the impacts of a project/program. Where this is the case, the following information must be recorded for each initiative identified:
(a) Estimated reduction (absolute and as a percentage of total estimate);
(b) Estimated implementation cost;
(c) Payback period;
(d) Any anticipated time or resource impacts on the design and construction program;
(e) Any complicating factors or issues that would need to be considered and resolved to successfully implement the identified opportunities;
(f) Details of how the estimated reductions and associated cost savings have been calculated, including estimated accuracy and any assumptions upon which they are based.

Refer to ‘Review of Emissions Reduction Opportunities’ (available on DPTI website) for a list of various GHG reduction initiatives that have been implemented on recent road, tunnel and rail projects in Australia and overseas.

8.1 Applying the waste hierarchy

The principles of the waste hierarchy must be applied to all DPTI projects. The following (or similar) process must be employed:
(a) List all the major material/product categories in the proposed asset/program along with estimated volumes;
(b) Identify opportunities for avoided demand;
(c) Identify which elements of the asset/program allow/disallow use of recycled materials;
(d) Identify possible sources of recycled materials and/or materials which have lower environmental impacts across their life cycle compared with competing materials/products;
(e) Undertake cost/benefit analysis to justify decision to use/not to use recycled materials/products;
(f) Apply procurement policies to preference suppliers of materials/products with high recycled content and/or those with lower environmental impacts across their life cycle compared with competing materials/products;
(g) Identify waste streams that will be generated by the project/program;
(h) Investigate opportunities to recycle these materials;
(i) Where recycling is possible, put measures in place to ensure waste streams are kept separate;
(j) Dispose of surplus material to appropriate resource recovery facilities.

9. Socially sustainable procurement

Sustainable procurement is ‘procurement that has the most positive environmental, social and economic impacts possible over the entire life cycle’ (ISO 20400:2017 Sustainable Procurement – Guidance). Given the large spends involved in infrastructure projects, there are significant opportunities to leverage more sustainable outcomes through procurement processes.
Parts 6-8 of this Sustainability Manual provide a framework for project teams to achieve more ecologically sustainable outcomes. This part focuses on the social sustainability outcomes, which fall into 3 distinct categories:

- **Local employment creation, skills development and opportunities for disadvantaged members of the community.**
  
  This is largely addressed via the Department of Industry and Skills’ Economic Contribution Test, Industry Participation Plan and Skilling South Australia requirements.

- **Community engagement and the opportunity for projects/assets to deliver wider community outcomes/benefits.**
  
  The department’s approach to community engagement is underpinned by the SA Government’s ‘Better Together: Principles of Engagement’, which draws on resources from the International Association for Public Participation (IAP2). It is focused on genuine, pro-active engagement with communities to better inform the department’s decision making processes. Guidance and resources are provided in the DPTI Community Engagement Toolkit.

- **Labour conditions, human rights and fair operating practices, including upstream supply chain impacts of goods and services.**
  
  The department expects all of its contractors to demonstrate due diligence in managing adverse sustainability impacts throughout the supply chain (regardless of whether they are required to report under the Modern Slavery Act (2018)). Such supply chain risks may include
  - Human rights: (e.g. economic, cultural, civil and political rights, discrimination and vulnerable groups)
  - Labour practices (e.g. employment relationships, conditions of work)
  - Fair operating practices (e.g. anti-corruption, fair competition, respect for property rights);
  - Consumer issues (e.g. fair marketing, factual and unbiased information, fair contractual practices).

  Suppliers/ Contractors may be requested to provide evidence of a formal commitment to address sustainability risks and opportunities in their supply chain. Such a commitment must:
  
  - be approved by senior management (e.g. Project manager, procurement director, Alliance leadership team);
  - be included in the project/ asset management framework.

  Suppliers/ Contractors may be requested to undertake a risk/opportunity assessment and implement appropriate procurement actions to mitigate/realise material risks/opportunities. The risk and opportunity assessment must be provided to the Principal and reviewed and updated annually.

  Examples of procurement actions to mitigate/ realise material risks/ opportunities might include incorporating questions, criteria or clauses in subcontractors’ tender documents, such as those shown in Box 9.1.

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3 ‘Material’ sustainability risks and opportunities are the most significant risks or opportunities for the project/asset and in its supply chain. Materiality may be influenced by:

- the origin of the good/service (e.g., is it coming from a country with known human rights violations or a high proportion of migrant workers?);
- the location of the project/asset (e.g., are there opportunities to use the procurement to positively impact areas communities with high rates of unemployment/ address local skills shortages?);
- expenditure on the good/service (generally the greater the amount of spend, the greater the risk); and
- ability to influence (as above, the greater the spend the more leverage you may have over your suppliers to influence their practices).
Box 9.1 Example questions which could be included in tender documents to mitigate/realise material social sustainability risks/opportunities in the supply chain

1. Which labour standards have been adhered to during the extraction of raw materials and throughout the manufacturing process?

2. Have you looked at the sustainability impacts of your supply chain? e.g. has your company published a statement under the Modern Slavery Act 2018? If not, how does your organisation ensure appropriate social and environmental standards are adhered to?

3. Has your organisation ever received a penalty or notice from the Fair Work Ombudsman or been in breach of the SA8000 standard for socially responsible employment practices, or similar?

4. Are your products certified under any accredited Product Stewardship Schemes?

5. Please provide your organisation’s Corporate Social Responsibility (CSR) statement or equivalent.

9.1 Sustainable site accommodation

Site accommodation not only has an environmental impact, but can also impact the well-being and productivity of its occupants. Appendix 7 lists a suite of requirements for more sustainable site facilities.

Where the contract requires site accommodation to be specified in accordance with this Sustainability Manual, the contractor must implement a minimum of 50% of the requirements listed at Appendix 7.

10. Green Infrastructure

Green Infrastructure refers to both natural and engineered ecological systems and networks designed as a multifunctional resource capable of delivering ecological services as well as climate change mitigation outcomes. These services include, but are not limited to:

- resilience to extreme heat
- mitigation of urban heat island effect
- stormwater run-off reduction
- water and air quality improvement
- carbon sequestration and storage
- aesthetic amenity
- biodiversity
- biophilia benefits
- encouragement of active transport
- place making

(Refer to Appendix C of Transport for NSW Green Infrastructure Guidance for more information on the individual environmental and community functions)

Ecological services from Green Infrastructure are important to the general public and the department’s customers, and can assist in the delivery of a number of the key business requirements listed in Table 3.1 of this Manual. It is therefore crucial that Green Infrastructure forms part of planning and design thinking from the outset of a project to ensure appropriate services, space allocation, funding and maintenance regimes are considered.
10.1 Assessing and documenting opportunities to incorporate Green Infrastructure

Where required in the Contract, the Contractor must assess and document opportunities to incorporate Green Infrastructure into the asset. This must include the following, as a minimum:

(a) Identify appropriate sites and installation locations that:
   - will support viable green infrastructure in terms of orientation, aspect and soil composition
   - don’t interfere with the efficient operation of the transport infrastructure
   - are visible/ accessible to increase the opportunity for the public to experience its benefits

(b) Investigate opportunities, including:
   - estimation of available/ potentially available space, evaluation of site conditions, project impacts to existing Green Infrastructure, and consideration of different ways of using GI as part of fences, walls, buildings, rooftops, car parks, and road medians
   - consideration of managing run-off using Water Sensitive Urban Design (WSUD), to achieve SA Government WSUD Policy targets for run-off quality/quantity
   - consideration of Green Infrastructure at locations that are potentially vulnerable to graffiti - where there are plain surface barriers (noise wall, retaining wall, and boundary fences) it may be far more cost-effective to increase plantings on or near the plain surface barrier than to try to deter graffiti by providing a textured treatment with an anti-graffiti coating
   - consideration of partnering opportunities with neighbourhood organisations, conservation or land care groups and local councils to sharing installation cost and maintenance support
   - estimation of installation costs, establishment period maintenance and ongoing maintenance costs
   - estimation of benefits to balance the installation and maintenance costs (refer to Water Sensitive SA website and Appendix D of Transport for NSW Green Infrastructure Guidance, for more resources and information on evaluating the economic benefit of Green Infrastructure)
   - consultation with asset operators/ maintainers (may include DPTI and local government)

Detailed design considerations for Green Infrastructure are provided in Appendix 6.

10.2 Asset handover

Prior to asset handover, the Green Infrastructure designer must carry out a review and sign off a post-completion report (or similar) certifying that the final built outcome is in accordance with the design and that the agreed upkeep of the Green Infrastructure has been adequate and meets the agreed establishment period specified in the initial plan.

Green Infrastructure elements should be included in the asset register as assets that need regular maintenance. To enable DPTI to develop and implement an effective maintenance plan, the following information must be included in the Asset Handover documentation:

- All relevant information on operational and maintenance regimes
- Any training needs for staff undertaking maintenance/ inspection
- Common problems that may trigger work outside routine maintenance (for example, the accumulation of sediment, rubbish and debris)
Appendix 1: Sustainability policy objectives, plans, internal and external programs to consider in Strategic Merit Test

**Emissions reduction**
- Net zero greenhouse emissions in SA by 2050 (Under 2 MoU and State Climate Change Strategy)
- Net zero greenhouse emissions in Carbon Neutral Adelaide zone by 2020 (Carbon Neutral Adelaide Action Plan and DPTI Strategic Plan 2016-20)
- Significant reduction in transport emissions (ITLUP)
- Monitor the emissions profile of the transport sector and develop strategies to contribute to the State’s emission targets and the achievement of Carbon Neutral Adelaide (ITLUP)
- Reduced carbon footprint of assets (DPTI Strategic Plan 2016-20)

**Public transport and active travel**
- Public transport, walking and cycling become a desired choice of travel for residents, reducing reliance on the car. (ITLUP)
- Increase the share of work trips made by active transport modes by 25% by 2045 (30 year plan)
- Reduce car dependency and increase public transport to 10 per cent of all transport use by 2018 (South Australia’s Strategic Plan, target T3.6).
- Maintain, extend and improve Adelaide’s Bikedirect network, including the development of greenways (30 year plan)
- Upgrade the existing Bikedirect network, including retrofitting existing bike lanes to best practice standards and extending bike lanes through intersections (ITLUP)
- Provide separated bike lanes and footpaths on key arterial roads (ITLUP)

**Urban form/ planning**
- Incorporate greenways in all transit-oriented developments and along major transit corridors (30 year plan)
- 60% of all new housing in metropolitan Adelaide will be built within close proximity to quality public transport (rail, tram, O’Bahn and bus) by 2045 (30 year plan for Adelaide)
- Increase the percentage of residents living in walkable neighbourhoods in metropolitan Adelaide by 25% by 2045
- Locate more than 50% of Greater Adelaide’s net dwellings growth and about 35% of Greater Adelaide’s new jobs in transit corridors. (30 year plan)

**Low emission vehicles**
- Accelerate the uptake of electric and hybrid vehicles (Carbon Neutral Adelaide Action Plan)

**Energy Efficiency**
- Improve the energy efficiency of government buildings by 30% of 2001 levels by 2020 (State Strategic Plan)

**Climate change adaptation**
- Minimise the department’s whole-of-life asset costs by planning, designing and maintaining assets to avoid future maintenance, repair, re-engineering and/or replacement costs associated with more frequent and severe extreme climatic events (DPTI Climate change adaptation strategy)
- A land use and transport system that is resilient to climate change, extreme weather events and emergencies (ITLUP objective)

**Water**
- Reduce demand on mains water supply from new development through the introduction of water-sensitive urban design (30 year plan)
- Minimise the discharge of stormwater, pollution and nutrients to freshwater, coastal and marine environments through the adoption of appropriate water-sensitive urban design (WSUD) policies and targets (30 year plan)
• Achieve the following minimum reductions in total pollutant load, compared with that in untreated stormwater runoff, from the development part of the site: 80% total suspended solids, 60% total phosphorus, 45% total nitrogen, 90% litter/ gross pollutants (SA WSUD Policy)
• Manage the rate of runoff discharged from development sites so that it does not exceed the pre-urban development 1 year ARI peak flow (SA WSUD Policy)
• Manage runoff from development sites such that the capacity of the existing drainage system is not exceeded and there is no increase in the 5 year and 100 year ARI peak flow, compared to existing conditions (SA WSUD Policy)

Waste
• 90% diversion of construction and demolition waste by 2020 (SA Waste Strategy 2015-20)
• 70% diversion of Municipal solid waste by 2020 (SA Waste Strategy 2015-20
• > 5% reduction in waste generation per capita by 2020 (from 2015 baseline)

Biodiversity
• A land use and transport system designed to not only minimise impacts on the natural environment (land, water, air and biodiversity) but also to enhance environmental outcomes (ITLUP)
• Support the enhancement of the urban biodiversity of metropolitan Adelaide through a connected and diverse network of green infrastructure. (30 year plan)
• Protect 115,000 hectares (13% of Greater Adelaide) of existing natural areas identified as areas of high environmental significance (shown in Map D19, 30 year plan)
• Maintain the existing range of lower intensity land uses, such as primary production, across 156,500 hectares (identified as areas of environmental significance in Map D19, 30 year plan). Where the retention of lower intensity land use cannot be achieved, minimise and offset impacts.
• Increase the extent of functional ecosystems (coastal, estuarine, terrestrial and riparian) to 30% of the region, excluding urban areas, consistent with regional NRM Plans (30 year plan)
• Urban green cover is increased by 20% in metropolitan Adelaide by 2045

Noise
• Undertake noise mitigation when constructing new or substantially upgraded roads or railways adjacent to areas that are sensitive to noise. (ITLUP)

Procurement
• In the context of whole-of-life value for money, select goods and services which have lower environmental impacts across their life cycle compared with competing goods and services (SPB Sustainable Procurement Guideline)

Internal and external programs to consider:
• Does the project present any opportunities for improved cycling/ walking infrastructure? Are there potential links with the Greenways Program?
• Does the project support travel behaviour change?
• Are there any local Council structure plans, economic development strategies, placemaking objectives that can be realised through the project?
• Is the project consistent with (or can it facilitate/enhance) plans/ precinct requirements for 14 transit oriented developments (Map D5 in 30 year plan)?
• Is the project consistent with (or can it facilitate/enhance) plans to designate 24 transit corridors serving areas of high regeneration potential (30 year plan)?
• Is the project consistent with (or can it facilitate/enhance) the planned coastal linear park from Sellicks Beach to North Haven (30 year plan)?
• Are there opportunities to contribute to/ take advantage of a 3rd party’s water reuse scheme/ WSUD infrastructure?
Appendix 2: Suggested format for ESD Report to DEW

1. Project Title

2. Project Description
   • Provide a description of the location of the proposed project.
   • Provide a description of the project, including the project rationale and scope.
   • Outline the proposed timing for the planning, design and construction of the project.
   • Outline any limitations of the report, including at what stage the report is being written in the project management process i.e. prior to selection of one of two preferred options, early planning phase, detailed design phase etc.

3. Key ESD risks/impacts and opportunities
   Outline the key environmental impacts and environmental sustainability risks/impacts and opportunities associated with the project, and what strategies the project team will use to mitigate/rerealise them. This information will be used in the text of the Cabinet Submission “Environmental Impact” section and the Public Works Submission “Ecologically Sustainable Development Strategies”.

   Include the following, if available*:
   • High level estimates of whole of life greenhouse gas emissions, water use, waste volumes and materials lifecycle impacts,
   • suggested sustainability initiatives for the design and construction of the asset,
   • suggested Minimum Sustainability Requirements for the design and construction of the asset,
   • outcomes of the sustainability impact assessment undertaken during Acquisition Planning.
   *this information can be taken from the planning phase sustainability plan, if one has been prepared at the time of submission. If not, just provide the best available information.

   Example wording:

   The key environmental sustainability issues relating to this project are:

   Greenhouse gas emissions
   • The options assessment included an estimate of greenhouse gas emissions generated from third party vehicles using the infrastructure, under a ‘do nothing’ scenario and for 2 potential alignments. The preferred option generated the lowest emissions.
   The project will generate greenhouse gas emissions during the construction phase due to the operation of construction equipment and site offices and the production and transport of materials (e.g. concrete, steel, asphalt, aggregate). The most significant sources of emissions are likely to be scope 3 greenhouse gas emissions from the production of concrete and asphalt. The main sources of emissions associated with the operation of the infrastructure are likely to be from road lighting and ITS. The design and construction contractor will be required to estimate emissions, identify the largest sources and implement feasible opportunities to reduce emissions, in accordance with DPTI Sustainability Manual. A Minimum Sustainability Requirement of x% reduction in emissions will be applied to the design and construction phase.

   OR
• The attached sustainability plan provides estimates of whole of life greenhouse gas emissions for the project reference design, as well as sustainability initiatives and minimum requirements which will be incorporated into the design and construction contract to drive reductions in greenhouse gas emissions.

Materials lifecycle impacts
• The design and construction contractor will be required to estimate materials lifecycle impacts, identify the greatest impacts and implement feasible opportunities to reduce them, in accordance with the DPTI Sustainability manual. A Minimum Sustainability Requirement of x% reduction in materials lifecycle impacts will be applied to the design phase. The contract will also include a mandatory sustainability initiative to utilise 50% SCM concrete on non-structural elements as an alternative to Ordinary Portland Cement (OPC) concrete.

OR
• The attached sustainability plan provides estimates of the most significant materials lifecycle impacts for the project reference design, as well as sustainability initiatives and minimum requirements which will be incorporated into the design and construction contract to reduce impacts.

Vegetation
• A combination of native vegetation, Regulated and Regulated Significant trees, and amenity (planted) vegetation will be impacted by the project. A survey of vegetation located within the project area has been undertaken. Trees with high ecological and/or amenity value have been identified and impacts to this vegetation will be minimised where possible within the project constraints.
• Approval for impacts to vegetation under the Native Vegetation Act 1991 and the Development Act 1993 is required and applications for clearance of vegetation under these Acts will be submitted once detailed designs have been developed. In accordance with the DPTI Vegetation Removal Policy and relevant legislation, offsets will be made for the clearance of vegetation.

Construction noise and operational road noise
• A construction noise and vibration management plan, and night works management plan will be developed and implemented for the project where required. These plans will identify measures to minimise impacts of construction noise, and affected residents will be notified throughout the construction phase.
• The project has the potential to change existing road traffic noise levels. Noise monitoring and modelling is currently being undertaken to determine the potential operational noise impacts of the project on sensitive receivers. The results of this work will be assessed against noise criteria within the DPTI Road Traffic Noise Guidelines (RTNG). DPTI will take reasonable and practicable measures to mitigate operational noise impacts in accordance with the RTNG, with a preference to minimising noise through design and treating noise at the source and along the transmission path. Methods to mitigate road traffic noise, if required, will be determined during the detailed design phase of the project.

Aboriginal heritage and Native Title
Today the project site is part of a highly modified landscape with residential, rural lifestyle and primary production properties immediately adjacent. The construction of the South Eastern Freeway has resulted in significant modification to the original topography and drainage patterns of the area; however, some remnant vegetation remains.
A search of the central archive, which includes the Register of Aboriginal Sites and Objects, administered by the Department of State Development, Aboriginal Affairs and Reconciliation Division, has no entries for Aboriginal sites within the project area.

Although no sites have been recorded, measures will be undertaken to minimise impacts to Aboriginal heritage in compliance with DPTI Cultural Heritage Guidelines and the Aboriginal Heritage Act 1988.

Native Title is likely to have been extinguished on freehold land and road reserves. If it is identified that Native Title has not been extinguished on some parcels of land then DPTI will consult with the Native Title Claim Representatives as required by the Native Title Act 1993.

**Water**

Construction of the project will require modification of existing drainage patterns and installation of drainage infrastructure to manage water flows both within and through the project area.

During construction a soil erosion and drainage management plan will be developed and implemented to manage water flows and water quality using effective erosion and sediment control measures.

A Water Affecting Activities Permit will be required under the Natural Resources Management Act 2004 if required.

4. **Environmental Impact Assessment, Legislative Compliance & Contract Management**

- Provide details of the environmental impact assessment and sustainability investigations undertaken during the planning phase (including the sustainability plan if one has been prepared)
- Provide a statement regarding compliance with environmental legislation including what permits or licences are required for the project.
- Provide a statement regarding the environmental clauses in the contract for the works.

**Example wording:**

An assessment of sustainability impacts and opportunities was undertaken during the planning phase to identify the areas of greatest impact and potential sustainability initiatives for further investigation during design. The Planning phase Sustainability Plan (attached) also suggests Minimum Sustainability Requirements and initiatives to be included in the contract for design and construction. These will be included in tender documents and contractors will have the option of proposing more ambitious targets for consideration during tender assessment. The successful contractor will be required to achieve the Minimum Sustainability Requirements and prepare a Sustainability Plan and progress updates for the design and construction phases, in accordance with DPTI Sustainability Manual part 5.

A detailed Environmental Impact Assessment (EIA) Report is currently being prepared by DPTI to investigate environmental issues and impacts for the project. The EIA process will also determine appropriate management measures to ensure compliance with environmental legislation. The Contractor will be required to implement appropriate management measures and comply with the requirements in the Environmental parts of the DPTI Master Specification. This includes preparing and implementing a Contractor Environmental Management Plan. The Contractor will be audited during construction to review compliance with environmental conditions.
The below table summarises relevant environmental legislation, and relevant external environmental approvals and permits for the project. Internal and external environmental approvals will be obtained as the project’s detailed designs are developed further.

### Relevant external environmental approvals and permits

<table>
<thead>
<tr>
<th>Environmental legislation</th>
<th>Environmental approval</th>
<th>Approving body/authority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal Heritage Act 1988</td>
<td>May be required:</td>
<td>Determine an Aboriginal site (s12)</td>
<td>There are no entries for Aboriginal sites on the DSD-AARD Central Archive within the project area. Construction will predominantly occur within previously disturbed land and the majority of works is fill rather than cut. The relevant Aboriginal groups will be consulted about the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disturb an Aboriginal site/object (s23) Directory of State Development, Aboriginal Affairs and Reconciliation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minister for Aboriginal Affairs and Reconciliation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department of State Development, Aboriginal Affairs and Reconciliation Division</td>
<td></td>
</tr>
<tr>
<td>Development Act 1993</td>
<td>Will be required:</td>
<td>Development approval to remove 7 regulated / significant regulated trees (i.e. tree damaging activities)</td>
<td>Vegetation surveys have identified 7 regulated and significant regulated trees that will or may be impacted by the project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development Assessment Commission</td>
<td></td>
</tr>
<tr>
<td>Environment Protection Act 1993</td>
<td></td>
<td>This project does not require environmental approval under this Act; however, the following documents will be prepared and implemented as required to ensure that DPTI meets its general environmental duty and other requirements of the Act: Soil Erosion and Drainage Management Plan, Noise and Vibration Management Plan, Night Works Management Plan, Site Contamination Assessment and Site Contamination Remediation Action Plan.</td>
<td></td>
</tr>
<tr>
<td>Native Title (South Australia) Act 1994</td>
<td>Will be required:</td>
<td>Determine Native Title on land being acquired for construction</td>
<td>Native Title investigations are required. Native Title has been extinguished on properties held in “Fee Simple”.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Attorney-General</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department of State Development, Aboriginal Affairs and Reconciliation Division</td>
<td></td>
</tr>
</tbody>
</table>
30

Native Vegetation Act 1991

Will be required:
Approval for clearance of native vegetation
Native Vegetation Council/delegate

Vegetation surveys have identified native vegetation that will be impacted by the project.

Natural Resources Management Act 2004

Will be required:
Water Affecting Activities Permit
SA Murray-Darling Basin Natural Resources Management Board

The project involves the realignment and modification of watercourses, and the installation of culverts and other drainage infrastructure.

5. Overview Table

The Overview Table outlines the ESD objectives, principles and example ESD actions and opportunities for the project and uses arrows to demonstrate whether the action could be classed as heading towards or away from sustainability (or maintaining status quo).

The SMP should include each ESD objective and relevant impacts (moving away from sustainability) and/or opportunities/actions that contribute towards a sustainable outcome (i.e. help to achieve the objective) or maintain the status quo.

The principles/actions outlined in the table are examples only to provide a guide; individual projects should add to or delete these as relevant. An option may include both measures that move towards and away from a sustainable outcome. However, any assessment should be based on the overall balance; what’s the final outcome, is it moving away or towards sustainability? Only include the principle/action relating to the final outcome. For example, vegetation may be removed (moving away from sustainability); however it will be offset, therefore the final outcome is one of maintaining the status quo.

Where reasonable and practical, mitigation measures should be implemented to at least ensure ‘status quo’ where adverse impacts are identified as reducing sustainability.
<table>
<thead>
<tr>
<th>ESD Objective (focusing on “Attaining Sustainability”)</th>
<th>Reducing Sustainability (Adverse impacts)</th>
<th>Neutral – Status quo or Mitigating Project Impacts</th>
<th>Enhancing Sustainability – (Positive impact)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protection of Water Quality</strong></td>
<td>Guiding Assessment Criteria (Bold) and example actions/opportunities (dot points) for incorporation into project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detrimental impact on water body - decline of health of receiving environment</td>
<td>No net change to water quality</td>
<td>contributes to improved health of waterways and water quality</td>
<td></td>
</tr>
<tr>
<td>Poor stormwater management practices – polluted stormwater discharged directly to water bodies (including groundwater) with no treatment</td>
<td>• Implementation of water quality treatment measures to ensure no net change in water quality (no improvement) e.g. construction measures to controlling contaminated runoff from site works, implementation of Soil Erosion Drainage Management Plan (SEDMP), limiting disturbed areas, monitoring runoff water quality from site</td>
<td>• Improving stormwater management – implementation/incorporation of treatment measures for construction and operation to reduce the impact of stormwater on nearby waterways (including groundwater).</td>
<td></td>
</tr>
<tr>
<td>• No treatment measures implemented to protect nearby waterways</td>
<td>• Appropriate storage of hazardous substances used during construction</td>
<td>• Design and incorporation of permanent measures to prevent spills/contaminated runoff from roads entering water bodies</td>
<td></td>
</tr>
<tr>
<td>• Generation of emissions to watercourse that have the potential to: result in adverse impacts; require remediation; or do not meet WQ criteria.</td>
<td>• Water sensitive urban design principles incorporated</td>
<td>• Water sensitive urban design principles incorporated (if delivering improvement over status quo)</td>
<td></td>
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<td></td>
<td>• Compliance with relevant water quality guidelines and Codes of Practices</td>
<td>• Compliance with relevant water quality guidelines and Codes of Practices (if delivering improvement over status quo)</td>
<td></td>
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<tr>
<td></td>
<td>• Methods incorporated for controlling contaminated runoff from site works including sediment loads (i.e. detention basins)</td>
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<tr>
<td></td>
<td>• Design and incorporation of permanent measures to prevent spills/contaminated runoff from roads entering water bodies</td>
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<tr>
<td></td>
<td>• Improving stormwater management – implementation/incorporation of treatment measures for construction and operation to reduce the impact of stormwater on nearby waterways (including groundwater).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Design and incorporation of permanent measures to prevent spills/contaminated runoff from roads entering water bodies</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>• Water sensitive urban design principles incorporated (if delivering improvement over status quo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Compliance with relevant water quality guidelines and Codes of Practices (if delivering improvement over status quo)</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Conservation and Reuse</th>
<th>Ongoing or large increase in water consumption during life of project</th>
<th>No net change in water consumption patterns over life of project and / or Minimisation of potable water consumption during construction and maintenance</th>
<th>Reduction in use of potable water consumption during operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No measures implemented to minimise consumption.</td>
<td>Any increases in consumption short term e.g. during construction</td>
<td>• Water efficient landscape design including plant selection (low water use species) and irrigation design (if delivering improvement over status quo)</td>
<td></td>
</tr>
<tr>
<td>Medium-long term increase in water consumption resulting from project</td>
<td>• Measures taken to minimise consumption</td>
<td>• Use of alternate water sources (non mains) where available and feasible for construction and landscape irrigation</td>
<td></td>
</tr>
<tr>
<td>Opportunities not taken to use alternate water supplies e.g. recycled water where available</td>
<td>• Compliance with state water conservation measures and restrictions</td>
<td>• Work in partnership with local government and developers on water protection and conservation schemes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Water efficient landscape design including plant selection (low water use species) and irrigation design</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use of alternate water sources (non mains) where available and feasible for construction and landscape irrigation (if delivering improvement over status quo)</td>
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</tr>
</tbody>
</table>
## Sustainability Manual: Appendix 2

### ESD Objective (focusing on “Attaining Sustainability”)

<table>
<thead>
<tr>
<th>Reducing Sustainability</th>
<th>Neutral – Status quo or Mitigating Project Impacts</th>
<th>Enhancing Sustainability – (Positive impact)</th>
</tr>
</thead>
</table>

#### Guiding Assessment Criteria (Bold) and example actions/opportunities (dot points) for incorporation into project

<table>
<thead>
<tr>
<th>Minimisation of energy consumption, use of renewable energy sources</th>
<th>Large increase in energy use over life of project with no measures taken to mitigate or reduce</th>
<th>No significant increase/change in energy use, any impacts short term only and/or minimisation of energy consumption over the life of the project and/or use of renewable energy resources</th>
<th>Reduction in energy consumption and/or use of renewable energy resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Establishes inefficient infrastructure which uses or contributes to the use of large amounts of energy over project life</td>
<td>• Impacts limited to construction phases – short term</td>
<td>• Lighting design optimisation for traffic signals and street lightening (if reducing energy use over status quo)</td>
<td>• Use of energy efficient traffic signals and street lightening (e.g. LED traffic lights) (if reducing energy use over status quo)</td>
</tr>
<tr>
<td>• No measures taken to incorporate energy efficient technologies or use of renewable energy</td>
<td>• Management measures in place to manage e.g. use of plant/equipment that is electrically and/or fuel efficient</td>
<td>• Use of Solar powered lighting or signs (if reducing energy use over status quo)</td>
<td>• Road design and operating conditions that reduce fuel consumption e.g. improving traffic flows/reducing congestion, smoothing traffic flows</td>
</tr>
<tr>
<td></td>
<td>• Lighting design optimisation for traffic signals and street lightening (if reducing energy use over status quo)</td>
<td>• Utilises opportunities for using renewable energy sources and incorporating renewable energy technologies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use of energy efficient traffic signals and street lightening (e.g. LED traffic lights)</td>
<td>• Use of Solar powered lighting or signs (if reducing energy use over status quo)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use of plant/equipment that is electrically and/or fuel efficient</td>
<td>• Road design and operating conditions that reduce fuel consumption e.g. improving traffic flows/reducing congestion, smoothing traffic flows</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Maximise use of materials with low embodied energy</td>
<td>• Minimise transport distances involved in the demolition, recycling, construction of the project e.g. use of locally sourced materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Taking a holistic lifecycle approach to energy management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Minimisation contribution to greenhouse gas emissions

<table>
<thead>
<tr>
<th>Significant contribution to increased GHG emissions over life of project with no measures taken to mitigate or reduce</th>
<th>No net change and/or minimising project contribution to GHG emissions</th>
<th>Reductions in GHG emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lost opportunities to improve traffic flow/congestion/travel time savings (inc fuel)</td>
<td>• Provision of pedestrian and cyclist access</td>
<td></td>
</tr>
<tr>
<td>• Additional significant traffic generation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Minimisation of Air Emissions (To be considered for urban projects)

<table>
<thead>
<tr>
<th>Increase in air emissions and their impacts in local environment</th>
<th>No significant change or ongoing impact due to project and/or minimisation of air emissions and impacts on a local scale</th>
<th>Reduction in air emissions and impacts on a local scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESD Objective (focusing on “Attaining Sustainability”)</td>
<td>Guiding Assessment Criteria (Bold) and example actions/opportunities (dot points) for incorporation into project</td>
<td>Enhancing Sustainability – (Positive impact)</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Reducing Sustainability (Adverse impacts)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral – Status quo or Mitigating Project Impacts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhancing Sustainability – (Positive impact)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ESD Objective (focusing on “Attaining Sustainability”)</strong></td>
<td><strong>Guiding Assessment Criteria (Bold) and example actions/opportunities (dot points) for incorporation into project</strong></td>
<td><strong>Enhancing Sustainability – (Positive impact)</strong></td>
</tr>
<tr>
<td>Waste Minimisation and use of recycled materials</td>
<td>No control measures to minimise Project Construction Waste to Landfill and/or incorporate recycled or recyclable materials</td>
<td>Control measures in place to manage waste and/or minimisation of waste to landfill.</td>
</tr>
<tr>
<td></td>
<td>Use of Recycled and Recyclable Materials</td>
<td></td>
</tr>
<tr>
<td>Protection of terrestrial and aquatic Biodiversity</td>
<td>Loss of areas of biodiversity value, significant impact on population or species of conservation significance</td>
<td>No ongoing impacts on biodiversity and or protection of significant areas of biodiversity or conservation significance</td>
</tr>
<tr>
<td></td>
<td>Significant environmental benefit / improvement to significant areas of biodiversity or conservation significance</td>
<td></td>
</tr>
</tbody>
</table>
### ESD Objective

(focusing on "Attaining Sustainability")

<table>
<thead>
<tr>
<th>Reducing Sustainability (Adverse impacts)</th>
<th>Neutral – Status quo or Mitigating Project Impacts</th>
<th>Enhancing Sustainability – (Positive impact)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guiding Assessment Criteria (Bold) and example actions/opportunities (dot points) for incorporation into project</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Management of Land Degradation and Contamination

- No post construction remediation of site, ongoing impacts associated with erosion etc.
- Acid Sulphate Soils not managed to avoid impacts
- Contaminants mobilised or spread as a result of works with no management
- Introduction of potentially contaminating activities to previously un-impacted/undisturbed areas with no treatment or management

- Minimise land degradation including erosion control especially during construction - implementation of Soil Erosion Drainage Management Plan
- Investigations to identify potential risks – site contamination testing – appropriate management measures documented in plan and implemented
- Acid Sulphate Soils avoided or managed to avoid impacts
- Contaminants not mobilised or spread as a result of works
- No introduction of potentially contaminating activities to previously un-impacted/undisturbed areas without treatments in place
- Contaminated material or sites appropriately managed to avoid impacts

- Significant environmental benefit provided through improvement to biodiversity/native vegetation (including marine) with remediation activities (improving the ecological viability of natural ecosystems)

#### Reduction in Transport Noise Impacts

- Increased noise levels likely to create ongoing impact on sensitive receptors

- No ongoing impact on noise sensitive receptors and / or minimisation of impacts of road traffic noise on noise sensitive landuses

- Reducing impacts of road traffic noise on noise sensitive land uses
<table>
<thead>
<tr>
<th>ESD Objective (focusing on “Attaining Sustainability”)</th>
<th>Reducing Sustainability (Adverse impacts)</th>
<th>Neutral – Status quo or Mitigating Project Impacts</th>
<th>Enhancing Sustainability – (Positive impact)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guiding Assessment Criteria (Bold) and example actions/opportunities (dot points) for incorporation into project</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase in noise levels beyond guidelines levels or of potential levels to create disturbance for adjacent noise sensitive land uses with no mitigation or offset</td>
<td>No or minor increases in noise but low potential for ongoing nuisance/impact. Implementation of noise mitigation strategy during construction, Compliance with DPTI Guidelines and other relevant guidelines. Minimisation of exposure to noise for noise sensitive land uses (e.g. incorporation of noise mitigation treatments). Implementation of noise mitigation strategy or measures e.g. walls, earth mounds, design changes, low noise surfacing adjacent to residential areas</td>
<td>Noise reduction or minimisation to sensitive land uses as a result of project (e.g. incorporation of noise barriers). Improvements to existing noise levels through treatments/design. Compliance with DPTI Guidelines and other relevant guidelines (where provides improvement over status quo). Implementation of noise mitigation strategy or measures e.g. walls, earth mounds, design changes, low noise surfacing (where provides improvement over status quo).</td>
</tr>
<tr>
<td>Support and Encouragement of Social and Community Involvement and Consultation</td>
<td>Community disengagement and alienation</td>
<td>Informed community and stakeholders</td>
<td>Establishment of relationships with community, stakeholders, customers and suppliers</td>
</tr>
<tr>
<td></td>
<td>No consultation/information provision to stakeholders likely to be affected or impacted by project</td>
<td>Provision of information to stakeholders (non participatory process). Development of a consultation strategy/plan</td>
<td>Community and stakeholder consultation, involvement and participation in planning. Incorporation of consultation outcomes into project planning. Involvement of full range of stakeholders. Consideration of co-existence with other projects and proposals in terms of cumulative impacts. Development of a consultation strategy/plan.</td>
</tr>
<tr>
<td>Minimisation of Social Impacts of Projects and infrastructure</td>
<td>Minimisation of Social Impacts of Projects and infrastructure</td>
<td>Positive Social Impacts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project misses opportunities to incorporate improvements for safety/access etc. Increased impact of road network on local community with no mitigation measures in place</td>
<td>Project impacts offset through mitigation measures – landscaping, noise barriers (not net improvement). Site selection that minimises social impacts, improves access etc. Identification and retention of items of value to local community</td>
<td>Provision of new public transport links, bicycle, walking, end of journey facilities. Improved access including disabled access or improved access for mobility impaired. Improved user and pedestrian safety and security. Improvements in traffic network/social and community benefits. Project will contribute to improved road/pedestrian safety, reducing accidents</td>
</tr>
</tbody>
</table>

Support and Encouragement of Social and Community Involvement and Consultation
<table>
<thead>
<tr>
<th>ESD Objective (focusing on “Attaining Sustainability”)</th>
<th>Guiding Assessment Criteria (Bold) and example actions/opportunities (dot points) for incorporation into project</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reducing Sustainability</strong> (Adverse impacts)</td>
<td></td>
</tr>
<tr>
<td>Contribution to the Concepts of Urban Design / Regeneration (For urban projects)</td>
<td>Degraded urban character and/or contributes to community isolation&lt;br&gt;No improvement or degradation of urban design / regeneration&lt;br&gt;Contributes to improved urban environment and/or lifestyle of local community</td>
</tr>
<tr>
<td>- Loss of community open space or amenity with no offset&lt;br&gt;- Loss of visual amenity values in area with no mitigation measures implemented</td>
<td>- Contributing to upgrade or redevelopment of an area&lt;br&gt;- Improved urban design or visual amenity&lt;br&gt;- Facilitation of further public space upgrades or creation of open space&lt;br&gt;- Enhancement of visual amenity through landscaping, improvements to open space etc</td>
</tr>
<tr>
<td>Enhancement of Visual Amenity (Contributes to loss or decline of Visual Amenity in area)</td>
<td>No net change&lt;br&gt;Improvement and Enhancement of Visual Amenity</td>
</tr>
<tr>
<td>- Decline in visual amenity with no measures taken to address impact e.g. removal of amenity plantings with no replacement</td>
<td>- No change to visual amenity or measures for mitigating impacts implemented&lt;br&gt;- Minimising visual impacts by considering during planning – lightspill, landscaping, buffers, appropriate urban design and streetscape e.g. roadside vegetation and roadside furniture&lt;br&gt;- Improving visual aspects by consideration during planning – lightspill, landscaping, buffers, appropriate urban design and streetscape e.g. roadside vegetation and roadside furniture&lt;br&gt;- Implementing opportunities for improving visual amenity e.g. enhancement through landscaping</td>
</tr>
<tr>
<td>Preservation of Cultural Heritage (Contributes to loss of Cultural Heritage sites/objects/areas)</td>
<td>No net change&lt;br&gt;Ensuring conservation and protection of Cultural Heritage</td>
</tr>
<tr>
<td>- Site(s) of heritage significance destroyed or substantially modified</td>
<td>- Mitigation measures to address any proposed impacts (e.g. relocation of monuments, significant objects/artefacts)&lt;br&gt;- No impact to sites of cultural significance&lt;br&gt;- Protection measures implemented to protect or conserve cultural heritage sites/objects (e.g. monitoring, fencing areas, avoidance through planning project)&lt;br&gt;- Measures taken to identify/investigate heritage issues e.g. Aboriginal Heritage surveys, Native Title status, checks of local, state and national heritage registers (non-indigenous)</td>
</tr>
<tr>
<td>Growing Prosperity contribute to competitive freight transport logistics and networks</td>
<td>Maximise the value of existing and future transport assets through more efficient use, targeted upgrades</td>
</tr>
<tr>
<td>- Contributions to improved productivity/growth of State’s export markets/attracts investment.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: Suggested format for Sustainability Progress Report

### Status of Sustainability initiatives

<table>
<thead>
<tr>
<th>Initiative description (including anticipated sustainability outcome)</th>
<th>Cost to implement</th>
<th>Payback period</th>
<th>Discretionary/Non-discretionary</th>
<th>Implement? Y/N</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
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</table>

### Progress towards Minimum Sustainability Requirements

<table>
<thead>
<tr>
<th>Initial estimate (prepared in accordance with DPTI Sustainability Manual part 6)</th>
<th>Initiatives currently proposed to achieve Sustainability Minimum Requirement</th>
<th>Current estimate (based on implementation of currently proposed initiatives)</th>
<th>Required final estimate (based on Minimum Sustainability Requirements being achieved)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

## Appendix 4: Business as Usual Assumptions

<table>
<thead>
<tr>
<th>Objective</th>
<th>Aspect</th>
<th>Business as usual assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimise generation of GHG</td>
<td>Concrete</td>
<td>25% Ordinary Portland Cement replacement</td>
</tr>
<tr>
<td>Minimise generation of GHG</td>
<td>Electricity (design and construction)</td>
<td>100% grid supplied electricity for design and construction offices 100% grid supplied electricity for construction activities 0% Green Power</td>
</tr>
<tr>
<td>Minimise generation of GHG</td>
<td>Fuel</td>
<td>0% biodiesel or alternative fuels used in construction plant, generators and light vehicles for design, construction and maintenance</td>
</tr>
<tr>
<td>Maximise waste avoidance and diversion from landfill</td>
<td>Construction and demolition waste</td>
<td>80% diversion of construction and demolition waste from landfill</td>
</tr>
<tr>
<td>Minimise materials’ lifecycle impacts;</td>
<td>Supply of supporting infrastructure (e.g. station/ street furniture, track sleepers and shelters)</td>
<td>0% recycled or reused content in products and materials</td>
</tr>
<tr>
<td>Minimise materials’ lifecycle impacts;</td>
<td>Aggregates</td>
<td>0% manufactured or reprocessed sand or aggregates.</td>
</tr>
<tr>
<td>Minimise use of mains water...</td>
<td>Water</td>
<td>100% mains water for all construction and operational uses.</td>
</tr>
</tbody>
</table>
### Appendix 5: Template for Sustainability Returnable Schedule

<table>
<thead>
<tr>
<th>Principal nominated sustainability initiatives</th>
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</thead>
<tbody>
<tr>
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| Contractor nominated sustainability initiatives | Anticipated benefit/ outcome | Included in Contract Sum (Yes/No) | Adjustment to Contract Sum if accepted | Adjustment to Sustainability Minimum Requirement(s) if accepted
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1 Sustainability initiatives nominated by the Contractor may present an opportunity to exceed the Minimum Sustainability Requirements set by the Principal in the Functional and Operational Requirements. In this case the Contractor may choose to nominate higher Minimum Sustainability Requirements. If the initiative is accepted by the Principal the sustainability target(s) for the project will be adjusted accordingly and the Contractor will be obliged to achieve the higher Minimum Sustainability Requirement(s).
Appendix 6: Detailed design considerations for Green Infrastructure

The requirements for assessing and documenting opportunities for incorporating Green infrastructure into assets are provided in part 10 of this Manual. Further detailed design considerations are provided here for reference.

1. Transport design constraints

It is necessary to consider the transport design constraints when selecting vegetation species and determining Green infrastructure placement within the transport network to ensure that the design will not create hazards and/or excessive maintenance obligations:

**Below ground utilities** - Consider below ground utilities and potential placement of other below ground utilities needed for the Transport network.

**Vegetation clearance envelopes (road, rail and shared use paths)** – When selecting vegetation consider mature canopy height and spread, having regard to future pruning requirements. Designs should seek to minimise the amount of pruning required to maintain the vegetation clearance envelopes described in DPTI Vegetation Removal Policy part 4.3.

**Overhead power lines** – Consider ongoing pruning that may be required to comply with Electricity (Principles of Vegetation Clearance) Regulations 2010. SA Power Networks have published a number of guidelines and educational resources on their website for managing vegetation around powerlines, including a Powerline Friendly Trees Guide.

**Operations and maintenance considerations** –:
- machinery access to maintain transport networks
- access to trackside equipment for rail corridors
- access to cable and services routes
- access for inspecting the structural integrity of walls to which green walls are affixed
- safe access to maintain Green Infrastructure
- consideration of multiple use for the available space (for example, drainage paths aligning with service locations)
- future costs across the asset life cycle
- unobstructed sightlines for intersections and level crossings
- vegetation root system which can impact on shallow buried service routes or undermine signalling foundations

2. Water Sensitive Urban Design (WSUD)

WSUD is a type of Green Infrastructure. When investigating opportunities to incorporate Green Infrastructure into a project, it is important to liaise with stormwater designers. Drainage strategies for infrastructure projects are required to achieve the SA Government WSUD policy targets for run-off quality and quantity, and Master Specification part PC-PL9 (when released) will require the concept drainage strategy to identify appropriate locations for WSUD infrastructure and consult with Council on WSUD opportunities.
3. Connectivity

For large-scale greenfield sites, investigation of Green Infrastructure opportunities should identify opportunities for ecological connectivity to prevent fragmentation or minimise potential fragmentation impacts. Paths that connect areas of ecological significance should be prioritised.

The Department for Environment and Water has a number of databases that can be used to identify areas of significance and opportunities for ecological connectivity. NatureMaps is an initiative that provides a common access point to maps and geographic information about South Australia's natural resources in an interactive online mapping format.

4. Crime prevention through environmental design (CPTED)

Green Infrastructure should be designed to ensure it supports good passive surveillance and does not create potential places of concealment. It is recommended that Green Infrastructure designers liaise with those responsible for undertaking the project’s CPTED risk assessment (if one is undertaken).

5. Green roofs and green walls

There are a number of considerations when designing a green roof system:

- **Drainage and irrigation** - Sites for green roofs should be assessed for drainage. A green roof may require a separately plumbed secondary drainage system. It is useful to carry out an irrigation water demand analysis to estimate water needs. Incorporate principles of WSUD.

- **Designing for maintenance** - Building maintainers should be advised of what is involved in the maintenance and need to be committed to managing it; otherwise environmental, social, and economic benefits may not be achieved. The system or asset cannot exceed the skills, technologies and resources of those who will be given the responsibility for the maintenance. It is also important that the delineation between the responsibilities of the installer and maintainer should be set out during the design. It may be that the green roof provider is best placed to undertake ongoing maintenance on a contract basis and can be included in the contract bidding.

- **Climatic factors on-site** - Wind, rainfall, solar radiation (shadowing and shading analysis), temperature, micro-climate should be considered in the design.

- **Structural weight loading** - The load bearing capacity of the building needs to be able to support the green roof installation throughout its life.

- **Waterproofing membrane** - Ensure that the waterproofing membrane is root resistant. An independent leak detection specialist should test waterproofing after installation and prior to handover.

- **Accessibility** - Consider how people will access the installation for maintenance. This might require stairs, lifts or platforms. It may also require balustrades, cables for attaching harnesses and ropes (fixed for fall protection), ladders, and elevated work platforms independent of the building.

- **Plant selection** - Plant types should be limited to only the low growing species for easier maintenance and to eliminate vegetation clearance issues.

- **Water balance** - The need to capture roof run-off in a rain garden may compete with the need to harvest the roof run-off as a secondary water source. In dryer areas of the state, green roofs may also require irrigation during prolonged dry periods to ensure that the vegetation is kept in a suitable condition. As such, the use of green roofs in South Australian conditions and applications should be considered through the examination of all elements of the water cycle rather than simply as a means to reduce run-off from roof areas.

For further information refer to the City of Adelaide or City of Melbourne websites for technical guides for the design and installation of green roofs.
Appendix 7: Sustainable Site Facility Requirements

1. Insulation in walls = R2.0 for new facilities, R1.8 for existing facilities, R2.5 for facilities built on site
2. Insulation in ceilings = R3.0
3. Low VOC paints where applicable for all internal surfaces
4. Low VOC adhesives and sealants throughout
5. Low VOC carpets, and / or use of recycled carpet where applied
6. LED lighting
7. Provide effective lighting control to eliminate the energy consumption from lighting during inactive periods. Acceptable control methods are sensors, timers, master control switches or equivalent
8. Chain of custody FSC or AFS timber throughout
9. Door closers on all external doors (to air-conditioned spaces)
10. Weather seals at all doors and windows (to air-conditioned spaces)
11. Use of blinds, tinting or external shading for all windows to office spaces
12. Provide effective air conditioning control to eliminate the energy consumption from air conditioning during inactive periods. Acceptable control methods are sensors, timers, master control switches or equivalent
13. A deconstruction plan of the site facilities and amenities, or a product stewardship policy by supplier/manufacturer that demonstrates end-of-life treatment of the site facility
14. For new builds, push button taps with aerators (to be 3.5L/min or less) to ablution blocks hand basins. Existing buildings to phase in over 3 years (by 2021)
15. For new builds, all toilets to be 3/4.5L dual flush and shower heads to be 7.5L/min. Existing buildings to phase in over 3 years (by 2021)
16. Building Manufacturers to operate an accredited ISO 14001 Environmental Management System
17. Solar panels installed to feed facilities, and potentially site as well
18. Low formaldehyde joinery and / or recycled FF&E
19. Rainwater collection/reuse
20. FSC timber for all temporary uses – e.g. stairs, decks and covered walkways
21. Star Energy Rated fridges
22. Star Energy Rated TVs
23. Star Energy Rated dishwashers
24. Sub-metering of electricity and water (monitoring site and site office / amenities separately)
25. Elimination of single-use crockery and cutlery
26. Paper, bottle, plastic (co-mingle) and printer cartridge recycling
27. Bike racks to facilities area