Environmentally Sustainable Design Policy
Guidelines for Council Buildings

Adoption date: 28 August 2017
Responsible Service Areas: Assets, Integrated Planning
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Parent policy: eClip record number: 17/39586

eClip record number: 17/21122
1. Introduction

The ESD Policy Guidelines for Council Buildings (Guidelines) are to be used to support the implementation of the ESD Policy for Council Buildings (ESD Policy). The Guidelines are to be used for building projects and include the surrounding assets. They are to be implemented as follows:

a. Follow steps in Section 3. Process & Governance to guide inclusion of ESD in building projects.

b. Identify tool and sustainability standard to be achieved for individual projects in Section 2. Policy Position.

c. ESD response is to be guided by Section 4. ESD Requirements.

d. Reporting on implementation of ESD Policy and Guidelines is to be informed by Section 5. Measuring our progress.
2. Policy Position

As identified in Council’s *ESD Policy for Council Buildings*, our policy position is:

*The requirements, standards and tools in the following table, should be applied to all Council building projects and surrounding assets, and developed in conjunction with the ESD Policy Guidelines for Council Buildings.*

**Table 1:** Triggers for ESD tools and standards

<table>
<thead>
<tr>
<th>Building project type</th>
<th>Project size or budget</th>
<th>Report requirement at design stage</th>
<th>Tools and standards*</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>Over $5 million</td>
<td>Sustainable Management Plan (SMP)</td>
<td>Minimum 5 Star certified rating under a current version of the Green Star - Design &amp; As Built rating tool</td>
</tr>
<tr>
<td></td>
<td>$3-5 million</td>
<td>SMP</td>
<td>Minimum 5 Star equivalent rating under a current version of the Green Star - Design &amp; As Built rating tool</td>
</tr>
<tr>
<td></td>
<td>$1-3 million</td>
<td>SMP</td>
<td>Minimum 4 Star equivalent rating under a current version of the Green Star - Design &amp; As Built rating tool or Built Environment Sustainability Scorecard (BESS) excellence</td>
</tr>
<tr>
<td></td>
<td>Under $1 million</td>
<td>Sustainable Design Assessment (SDA)</td>
<td>BESS best practice – excellence</td>
</tr>
<tr>
<td>Renewal/renovation</td>
<td>&gt;70% change to gross floor area (GFA), or &gt;$1 million</td>
<td>SDA</td>
<td>BESS excellence</td>
</tr>
<tr>
<td></td>
<td>30-70% change to GFA, or &lt;$1 million</td>
<td>SDA</td>
<td>BESS best practice - excellence</td>
</tr>
</tbody>
</table>
| Fit outs                    |                        | Meet the requirements set out in the *ESD Policy Guidelines for Council Buildings* for the following:  
  • Water Efficiency Labelling and Standards (WELS) scheme specified for water efficient appliances, fittings and fixtures  
  • Energy Rating Label specified for electrical appliances  
  • Guidance from the materials section |

*Within projects, energy efficiency and renewable energy measures with a simple payback of 10 years or less are to be implemented.*
2.1 Report requirement at design stage

An integrated approach to ESD in buildings is required to assess sustainability options early in the project planning stage. This is to determine the ESD priorities relative to building type, use and site and to identify multiple benefits that can be achieved through the project.

Prior to the development of a Sustainable Management Plan (SMP) an ESD options report must be prepared that includes site specific ESD options that indicates effectiveness/benefits and costs to assist Council with decision making for final design.

**Sustainable Design Assessment (SDA)**

At design stage, new building and renewal projects under $1 million require an SDA. The SDA is a *simple* sustainability assessment and must indicate how the project will address the sustainability objectives, targets and standards of the ESD Policy and Guidelines.

A BESS report for the project must accompany the SDA.

**Sustainable Management Plan (SMP)**

At design stage, new buildings over $1 million require an SMP. The SMP is a *detailed* sustainability assessment and must indicate how the project will address the sustainability objectives, targets and standards of the ESD Policy and Guidelines. The SMP must also provide a schedule for implementation, ongoing management, maintenance and monitoring and how the ESD elements and practices can be maintained over time.

The ESD guidelines are minimum requirements and innovation and measures above the requirements are highly encouraged, as larger projects will generally have greater opportunities for positive environmental outcomes and resource savings.

Where the BESS standard is targeted, a BESS report must accompany the SMP.

Where a Green Star equivalent standard is specified, Council’s Guideline requirements are to be used in conjunction with the current version of the Green Star – Design & As Built rating tool and Submission Guidelines, with the SMP indicating how the standard will be achieved.

Where Green Star certification is specified, the necessary process to achieve certification must be followed.

2.2 Standards

Standards specified in table 1 are minimum requirements and should not preclude projects from achieving a higher standard where significant additional environmental, financial, or social benefits can be realised.
3. Process & Governance

The process and checklist in Table 2 are for main points within the building project process where ESD considerations are required. It is to facilitate holistic inclusion of ESD and document the decision making process. This table must be completed for building projects.

Table 2: Project process and responsibilities for ESD in building projects

| Project stage          | Process                                                                 | Lead               | Includes                                                       | Applied | Summary of process undertaken |
|------------------------|-------------------------------------------------------------------------|--------------------|                                                               |         |                              |
| Scoping                | Include Integrated Planning and other relevant Council service area representatives in the Project Working Group to provide advice on ESD issues, requirements and priorities | Project Sponsor    | Assets, Integrated Planning, relevant service areas,          | □       |                               |
| Scoping and business case | Identify relevant ESD standard (see Table 1). Determine scope for Guideline requirements based on building type, site/location and use | Project Sponsor    | Assets, Consultant/s, Integrated Planning, relevant service areas | □       |                               |
| Scoping and business case | Identify and explore possible external project partnerships (e.g. research institutions, community groups, other levels of government etc.) to encourage knowledge sharing and to trial new ESD approaches and technologies | Project Sponsor    | Assets, Integrated Planning, relevant service areas          | □       |                               |
| Business case          | Include ESD requirements for design, construction and building commissioning in project budget estimates | Project Sponsor    | Assets, Integrated Planning                                 | □       |                               |
## ESD Policy Guidelines for Council Buildings

### Table 1 cont.

<table>
<thead>
<tr>
<th>Project stage</th>
<th>Process</th>
<th>Lead</th>
<th>Includes</th>
<th>Applied</th>
<th>Summary of process undertaken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>a.</td>
<td>Projects $2.5 million and over and complex projects require a suitably qualified ESD consultant to be engaged as part of project design team to provide advice for whole of project from schematic design to commissioning</td>
<td>Project Manager</td>
<td>Integrated Planning</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>b.</td>
<td>Projects under $2.5 million require ESD to be addressed by lead consultant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td>Design and construct and complex projects must engage an Independent Commissioning Agent (ICA) to provide advice, monitoring and verification of the commissioning and tuning process. The ICA is independent from the design team and engaged by Council</td>
<td>Project Manager</td>
<td>Assets</td>
<td>□</td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td>ESD requirements (scope of works) in tender design brief to be signed off by Project Working Group or by Project Steering Group, CMT and Council – determined by risk profile of project</td>
<td>Project Manager</td>
<td>Project Working Group or Project Steering Group, CMT, Council for high risk projects, ICA (if triggered)</td>
<td>□</td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td>Tender design brief/specification to include project specific ESD requirements, standards and targets</td>
<td>Project Manager</td>
<td>Finance &amp; Governance, Integrated Planning, relevant service areas</td>
<td>□</td>
</tr>
<tr>
<td>Project stage</td>
<td>Process</td>
<td>Lead</td>
<td>Includes</td>
<td>Applied</td>
<td>Summary of process undertaken</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------</td>
<td>------------------------------------------------------</td>
<td>---------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Design</td>
<td>Review ESD design proposal against design brief and consider value for money (whole of life cycle), fit for purpose and multiple sustainability and risk mitigation benefits</td>
<td>Project Manager</td>
<td>Assets, Integrated Planning, relevant Service Areas, ICA (if triggered)</td>
<td>❑</td>
<td></td>
</tr>
<tr>
<td>Contract development</td>
<td>Sign off ESD detailed design contract documentation for inclusion in construction tender and relevant contract clauses amended to reflect specific deliverables (e.g. where Green Star certification is to be achieved)</td>
<td>Project Manager</td>
<td>Governance &amp; Finance, relevant Service Areas, Integrated Planning, ESD Consultant (if triggered)</td>
<td>❑</td>
<td></td>
</tr>
<tr>
<td>Contract development</td>
<td>Include hold points for ESD components for building tuning period (where applicable for larger projects) and commissioning</td>
<td>Project Manager</td>
<td>Finance &amp; Governance, Integrated Planning</td>
<td>❑</td>
<td></td>
</tr>
<tr>
<td>Contract development</td>
<td>Include Environmental Management Plan requirement in construction tender to identify and minimise the environmental impacts of demolition, excavation and construction</td>
<td>Project Manager</td>
<td>Finance &amp; Governance, Integrated Planning</td>
<td>❑</td>
<td></td>
</tr>
<tr>
<td>Contract development</td>
<td>Construction tender to include ESD requirements as per design brief</td>
<td>Project Manager</td>
<td>Finance &amp; Governance, Integrated Planning</td>
<td>❑</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>Contract management to include checks to ensure ESD requirements are being included in the build/works through hold points schedule at set milestones in the project program</td>
<td>Project Manager</td>
<td>Consultant/s, &amp; ESD Consultant, ICA (if triggered)</td>
<td>❑</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1 cont.*
<table>
<thead>
<tr>
<th>Project stage</th>
<th>Process</th>
<th>Lead</th>
<th>Includes</th>
<th>Applied</th>
<th>Summary of process undertaken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Ensure ESD sign off before practical completion, where applicable (i.e. check commissioning documents and return of bank guarantee or retention)</td>
<td>Project Manager, Assets, Integrated Planning, relevant Service Areas, Consultants, Contractors (to ensure all sub-contractors have complied), ICA</td>
<td>Consultant/s, ESD Consultant, ICA</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Commissioning</td>
<td>12 months commissioning and building tuning to include ESD performance and handover (where relevant)</td>
<td>Project Manager, Assets</td>
<td></td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Commissioning</td>
<td>Operation &amp; maintenance information provided for facility managers and to also include details to enable buildings to operate at optimal environmental performance</td>
<td>Project Manager, Assets, Contractors, Facility managers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commissioning</td>
<td>Facility user group training (where relevant) and establish process for future hand over and ongoing training</td>
<td>Project Manager, Assets, Contractors, Facility managers</td>
<td></td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Commissioning</td>
<td>Report on ESD as built measures provided to facilitate reporting and communication of sustainability achievements</td>
<td>Project Manager, Assets, Integrated Planning Contractors, ESD Consultant</td>
<td>Facility managers, Facility users</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Training &amp; awareness raising</td>
<td>Building user information provided to identify the ESD initiatives in the building and surrounds, how to use them effectively and to make initiatives visible to further community and council action, connection and understanding</td>
<td>Project Manager, Assets, Integrated Planning Communications &amp; Marketing</td>
<td>Facility managers, Facility users</td>
<td>□</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 cont.
# ESD Policy Guidelines for Council Buildings

<table>
<thead>
<tr>
<th>Project stage</th>
<th>Process</th>
<th>Lead</th>
<th>Includes</th>
<th>Applied</th>
<th>Summary of process undertaken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset management</td>
<td>Consultants to fill out a PAR (asset register form) form for brand, size, replacement, recycling details of ESD plant and equipment</td>
<td>Consultant, Assets</td>
<td>Facility managers</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Ongoing maintenance &amp; management</td>
<td>Scheduled maintenance as per manufacturer's recommendations to ensure proper functioning and efficiency and longevity</td>
<td>Assets</td>
<td>Facility managers</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Ongoing maintenance &amp; management</td>
<td>Replacement to maintain or improve occupant comfort level and be more energy/water efficient if available</td>
<td>Assets</td>
<td>Facility managers</td>
<td>□</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1 cont.*

Note: The above is the preferred approach to implementation however roles and responsibilities may differ project to project.
4. ESD Requirements

The tables in this section provide objectives and requirements for eight sustainability categories. At the project planning stage priorities and requirements for individual building projects should be determined in consultation with relevant Council service areas, as not all requirements may be suitable for each project.

The ESD approach will be relative to the location, use and size of the building project.

Documentation requirements specified in the tables should be supplemented with documentation required for relevant sustainability assessment tools (listed in Table 1).

4.1 Climate Change Risks

<table>
<thead>
<tr>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Prepare for projected future changes in climate that indicate Melbourne’s east can expect to experience hotter drier conditions with more frequent and prolonged extreme events in the form of heatwaves, droughts, bushfires, and more intense rainfall events, by increasing the resilience of buildings and surrounding assets</td>
</tr>
<tr>
<td>• Integrate building vulnerability assessment at the design stage for new buildings and renewal with regard to building type, use and location. Identify significant risks to be addressed in building design and construction</td>
</tr>
<tr>
<td>• Identify actions that can provide stand-by power generators for nominated emergency relief centres, improved building performance in extreme weather and incorporate thermal comfort, drainage, and water storage considerations into building retrofit designs</td>
</tr>
<tr>
<td>• Select and use appropriate climate sensitive materials and urban elements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project stage</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| Planning              | 1. Assess climate change scenarios and identify impacts on building specific to type, location and use, including two time frames relevant to the expected life of the building. Mitigation of impacts to inform building design.  
                          | See ‘Projected future changes in climate for the EAGA region’ (table 1a) and ‘Summary of most likely projected future changes’ (table 1b) in the EAGA Bushland and Urban Biodiversity Management in a Changing Climate, Appendix 2a: climate change projections paper |
| Concept design        | 2. Undertake a climate change vulnerability assessment of the proposed building design using the EAGA & NAGA Building Vulnerability Assessments Toolkit (eClip 17/8559). Vulnerability risks rated high and greater to be prioritised and relevant recommendations addressed in building design and construction |
| Documentation required| Results of building vulnerability assessment and completed Prioritised Vulnerabilities Action Sheet from EAGA & NAGA Building Vulnerability Assessments Toolkit (eClip 17/8559) |
### 4.2 Energy

**Energy Efficiency and Renewable Energy**

<table>
<thead>
<tr>
<th>Project stage/feature</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| **Objectives**        | - Work towards net zero carbon buildings  
- Reduce operational energy use and greenhouse gas emissions to below the Building Code of Australia (BCA) minimum requirements  
- Minimise operational energy needs by optimising the performance of the building envelope and using passive design principles  
- Minimise operational energy use, greenhouse gas emissions and peak demand through energy efficient plant, equipment and appliances  
- Create comfortable and healthy indoor environments by maximising natural light, passive design and adequate ventilation and fresh air intake  
- Increase the generation of on-site renewable energy to reduce reliance on fossil fuels  
- Use battery storage and consider off grid systems where possible or when the cost of grid connection is significant |
| **Planning**          | 1. Thermal performance (building envelope) and energy modelling to demonstrate a minimum 25% improvement on BCA section J reference building. Provide operational greenhouse gas estimates  
2. Building designed to function effectively throughout the seasons and for local temperatures to improve the comfort of occupants while minimising mechanical heating and cooling needs and artificial lighting by using passive design principles, as appropriate to building type and use  
3. There is a preference to avoid gas use in buildings to enable present or future use of renewable energy sources |
| **Design**            | 4. Provide natural lighting opportunities to minimise the use of artificial lighting  
5. Windows to exceed the energy efficiency minimum requirements of the BCA section J 2.4  
6. Fixed or adjustable external shading, provided as appropriate, to minimise heat gain in summer and allow winter solar gain |
| **Windows and shading** | 7. Occupancy sensors and/or lux sensors installed where appropriate  
8. Lighting control system installed where appropriate  
9. LED technology to be used where it can meet the relevant lighting standard  
10. Where high-bay lighting is to be used, microwave and lux sensors must be integrated into the lighting design where appropriate. Options for variable light output based on lux conditions must be presented to council as an option |
| **Design Lighting**   | 11. Single split system air-conditioners (Direct Expansion (DX)) should not be proposed. However, where sensible, units to be no less than 1 star of the highest Energy Rating available. Choose units with refrigerants with low Global Warming Potential  
12. In designs where a packaged unit is not applicable, centralized Variable Refrigerant Volume (VRF)/ Variable Refrigerant Flow (VRF) DX units must be utilised. Systems must be zoned by occupancy and controlled centrally. Where zones are expected to be infrequently utilised, localised push button timed control should be implemented |
13. Multiple head and VRV/VRF split system and packaged air-conditioner systems to improve on the minimum energy efficiency ratios (EER) and Co-efficients of performance (COP) available for Minimum Energy Performance Standards (MEPS) or on Section J specification for energy efficiency ratios for products where MEPS does not apply. Choose units with refrigerants with low Global Warming Potential.

14. Where total heating or cooling exceeds 300kW in capacity, Council will contract a third party engineering firm to model the presented system options, which should include but not limited to:
   - Chiller/boiler configuration
   - Chiller/heat pump configuration
   - Chiller/heat pump/thermal storage configuration

   The third party engineering firm will be briefed to ensure calculations utilise total cost of ownership, electricity demand component, maintenance and other outputs so that council can make an informed decision.

15. Design HVAC Controls

16. Where total heating or cooling exceeds 300kW in capacity, controls strategies must include:
   a. Night time purge
   b. Optimal start
   c. Variable heat exchange
   d. Variable air flow
   e. CO2 feedback
   f. Controls strategies should be deployed that avoid the use of heating and cooling in the same day

17. Design Hot Water

18. High efficiency heat-pump or solar hot water systems should be considered as part of the hot water system design solution. Hot water system design to consider time of year and day use, demand and to give the best cost and carbon savings.

19. Design Electrical Appliances

20. Insulate pressure relief valve and where relevant, hot water pipes that feed into the building.

21. Appliances with an Energy Rating label (air conditioners, clothes dryers, washing machines, computer monitors, dishwashers, fridges and freezers, televisions) to be no less than one star of the highest Energy Rating available.

22. Glass door fridges to be used only if required through regulation, industry best practice or health requirement.
<table>
<thead>
<tr>
<th>Design</th>
<th>23. Install ceiling fans to improve summer and winter comfort, where suitable, as part of building’s heating and cooling strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling Fans</td>
<td>In buildings where doors are opened for long stretches of time during summer, time delay controls are to be included to switch off air-conditioners and activate fans when doors left open</td>
</tr>
<tr>
<td>Design</td>
<td>24. Solar PV to be installed to give the best cost and carbon savings over 10 years</td>
</tr>
<tr>
<td>Renewable Energy</td>
<td>Battery storage to be considered, where suitable, and to give the best cost and carbon savings over 10 years. Allow for battery storage in the future, by providing enough physical space in the building design</td>
</tr>
<tr>
<td>Design</td>
<td>25. Buildings with separate tenancies to have individual electricity and gas meters for billing and energy monitoring</td>
</tr>
<tr>
<td>Metering</td>
<td>26. For buildings over 300kW in heating and cooling capacity monitoring of gas and electricity to be connected to the building management system</td>
</tr>
<tr>
<td></td>
<td>27. Solar PV systems to be fitted with a pulse output equipped sub-meter to allow integration with a future centralised monitoring system</td>
</tr>
<tr>
<td>Documentation</td>
<td>Thermal performance and energy use modelling to indicate how energy reduction target above section J BCA requirements has been met and to optimise passive design opportunities</td>
</tr>
<tr>
<td>Required</td>
<td>Solar PV modelling indicating estimated annual energy generation of system and building’s annual expected solar PV use</td>
</tr>
<tr>
<td></td>
<td>Building plans to indicate solar PV system location and capacity, hot water system, heating and cooling system, lighting location type and controls</td>
</tr>
</tbody>
</table>

### 4.3 Management

**Management**

| Objective                        | • Ensure building systems are functioning optimally and as designed and encourage informed use to maximise environmental performance  |
|                                 | • Facilitate understanding of environmental outcomes and components of ESD initiatives, systems and processes that are integrated into the building and surrounds  |
|                                 | • Make ESD components visible to building users to raise awareness and enable users to experience buildings of a high ESD standard  |

<table>
<thead>
<tr>
<th>Project stage</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commissioning</td>
<td>1. Operations and maintenance manual for facility managers to include ESD initiatives, systems and processes that have been included in the building, their function and operational and maintenance requirements</td>
</tr>
<tr>
<td></td>
<td>2. Where relevant, 12 months commissioning and building tuning to include verifying of optimum and proper functioning of ESD initiatives, systems and processes and handover to building manager/s</td>
</tr>
</tbody>
</table>
3. Building manager/s training (where relevant) for optimal building management and establish process for future hand over and ongoing training

4. Building users manual to identify ESD initiatives, systems and processes to assist occupants with building use that encourages positive environmental outcomes and raise awareness about sustainable design. This may include, but not be limited to, public electronic display of energy and water use and water harvesting and renewable energy generation, a booklet, signage, prompts, training, tours, induction etc. and where relevant will include the building surrounds

### 4.4 Materials

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| - Protect health and wellbeing by reducing indoor pollutant levels  
- Encourage responsible sourcing of construction and fit out materials including recycled content and recyclable materials | 1. All engineered wood products and insulation to meet the E0 Australian Standard for formaldehyde limits with materials with no formaldehyde to be used in senior citizens and early years centres  
   Where E0 standard cannot be met, comply with formaldehyde limits in the Green Star Design & As Built Indoor Pollutants credit  
2. Indoor paints, adhesives and sealants to comply with maximum total volatile organic compound (VOC) limits as specified in the Green Star Design & As Built Indoor Pollutants credit  
3. Preference for carpet tiles certified under the Carpet Institute of Australia, Environmental Certification Scheme. Preference for level 4 certification, recycled content and take-back at end of life  
4. Preference for flooring products with recycled content and GreenTag, Green Environmental Choice Australia or Ecospecifier certified and take back at end of life  
5. Preference for furniture reuse. New furniture to be GreenTag, or Green Environmental Choice Australia or Ecospecifier certified for buildings occupied by Council  
6. Preference for reused timber or Forest Stewardship Council (FSC) certified |

Documentation required: Completed Green Star Sustainable Products Calculator
## 4.5 Sustainable Transport

<table>
<thead>
<tr>
<th>Sustainable Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
</tr>
<tr>
<td>• Encourage and promote a shift to sustainable transport modes that reduce greenhouse gas emissions and encourage physical activity</td>
</tr>
<tr>
<td>• Building design and surrounds to boost access and connectivity encourage growth in public transport usage and cycling and walking to the facility.</td>
</tr>
<tr>
<td>• Explore innovative parking solutions that consider future needs and new transport trends and technologies (e.g. driverless cars, electric vehicles).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project stage/function</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning</strong></td>
<td>1. Produce a Travel Plan that addresses council’s ESD sustainable transport requirements with guidance from the Green Star Sustainable Transport Calculator Guide, section 6 Travel Plan</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>3. Provide direct connections for pedestrian paths from the car park to the building</td>
</tr>
<tr>
<td></td>
<td>4. Provide continuous, safe, and accessible connections from the building to existing footpaths and bicycle network and links to bus stop and/or stations (where appropriate)</td>
</tr>
<tr>
<td></td>
<td>5. Provide links to community facilities and open space (where appropriate)</td>
</tr>
<tr>
<td>Connectivity and access</td>
<td>6. Provide amenity infrastructure for pedestrians such as shading, shelter, water fountains, seating, way finding signage and lighting, for the building’s surrounds with guidance from the Maroondah City Council Infrastructure &amp; Landscape Guidelines</td>
</tr>
<tr>
<td></td>
<td>7. Design legible and aesthetically pleasing movement corridors within buildings that facilitate informed choice of routes and encourages incidental physical activity</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>8. Provide bicycle parking and end of trip facilities with type and quantity determined by location, level of use of the facility and current and future cycling rates to the facility with guidance from the Maroondah City Council Infrastructure &amp; Landscape Guidelines, Particular Provisions 52.34 Bicycle Facilities of the Victorian Planning Scheme, and Bicycle Network’s Bicycle Parking Handbook. Aim for above Planning Scheme minimum requirements for bicycle parking where feasible</td>
</tr>
<tr>
<td>Cycling</td>
<td>9. Provide internal recharging points with adequate circulation space for electric mobility devices in key destinations (i.e. customer service centres, seniors centres, libraries, leisure centres)</td>
</tr>
<tr>
<td>Electric vehicles, bikes and mobility devices</td>
<td>10. Consider charging points for electric vehicles and bicycles, with energy to be provided from renewable sources</td>
</tr>
</tbody>
</table>
Internal floor plan indicating electric mobility device charging points with adequate circulation space

Building and landscape plans to indicate sustainable transport infrastructure (i.e. bicycle parking and signage, drinking fountain, electric vehicle and bike charging stations, connecting paths etc.)

4.6 Urban Ecology

Objectives
- Ensure compliance with relevant organisational and legislative requirements
- Protect, enhance and restore open space, native vegetation and biodiversity and habitat values
- Assess and address impacts of development on open space and biodiversity. Incorporate designs to maximise and work with natural systems
- Integrate hydraulic and vegetation management objectives to protect biodiversity
- Create healthy and comfortable outdoor spaces that use vegetation to provide shade, fresh air, cooling, wind and flood protection, address the urban heat island effect and increase amenity
- Ensure that buildings and associated works minimise impact on green open space
- Any vegetation removal to be compensated by biomass equivalent

<table>
<thead>
<tr>
<th>Project stage/function</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| Scoping                | 1. A preliminary ecological/landscape site assessment must be undertaken if/as required to identify:  
- Current flora and fauna habitat  
- Links with open space reserves, Sites of Biological Significance and Habitat Corridors (see Habitat Corridors IntraMaps layer for Habitat Corridor locations)  
- Impact of proposed project on hydrology flow and water discharge  
- Landscape values and the services provided by existing vegetation |
|                        | 2. Identify any planning controls – seek clarification on nature of controls from Statutory Planning (if needed) |
| Planning               | 3. Landscape design and treatment must be informed by current strategic direction, including any applicable Master Plan and current and future priority landscape functions for the site (e.g. to improve water quality, increase biodiversity, provide shading and cooling, provide links to walking paths etc.) and preliminary ecological/landscape site assessment. For large/complex projects, consider the appointment of a landscape architect as part of the design team with experience in the identified priority landscape function. |
4. Review and in-principle approval must be sought from the relevant vegetation/land managers as outlined below.

Vegetation/land managers must be presented with the site assessment (as outlined in Urban Ecology point 1) to assist with making an informed judgement/decision.

a. Council’s Bushland Management department must be consulted if project sites are:
- Near bushland reserves (as they are considered within the bushfire hazard zone) to specify risk mitigation measures which must be integrated into the project. The bushfire buffer zone must be included within the development parcel and not within the bushland reserve
- Near or connect to a priority bushland site* to assess impacts, specify protective measures and measures to contribute to biodiversity quality and quantity
  *Priority bushland sites are identified in Council’s IntraMaps layer Bushland>Biodiversity Monitoring

b. Council’s Open Space Coordinator must be consulted to:
- Assess the need and use for surrounding open space, including to provide recreational and/or educational opportunities

c. Council’s Team Leader Tree and Park Maintenance must be consulted prior to any works or disturbance that may occur in or adjacent to a tree protection zone

d. Council’s Environmental Planners must be consulted if:
- Any existing vegetation is jeopardised (directly or indirectly) by the proposed development to assess impact and clarify permit requirements

e. Relevant vegetation/land managers (i.e. Open Space Coordinator, Team Leader Tree and Park Maintenance, Team Leader Bushland Management) and Environmental Planners must be consulted to:
- Assess potential consequences of damage to or clearing of native vegetation. If justified/permitted, it must only occur with appropriate planning permission and the consent of the vegetation/land manager

f. Relevant vegetation/land managers must be consulted if:
- Proposed works on roads or roadsides may impact native vegetation (including individual trees) to assess/or obtain an assessment and minimise the consequences of works. An Access to Council Land Permit (vehicular access to Council land) is required. Also refer to the Maroondah Tree Protection Guidelines
## Concept design
### Habitat and ecosystem maintenance/protection

5. Landscape design must meet the following objectives for habitat and ecosystem maintenance/protection/benefits, as relevant to project location:
   - Ensure continuity of existing and new vegetation to provide and enhance habitat
   - Protect natural areas, notable trees, habitat and biodiversity within the built environment, along roadides and in open space [reserves]
   - Indigenous plants to be selected, unless other species are more appropriate for a changing climate and for cooling. Please refer to the *Maroondah Tree Planting Guidelines*

6. Where weeds are an issue, select strongly competitive native species including groundcovers, grasses and dense shrubs to crowd out weeds

7. Increase ecological value and achieve a minimum 1 point in the Green Star Design and As Built Ecological Value Calculator

8. Minimise air-conditioning use and related energy consumption in buildings through shading of buildings and use of vegetation to reduce air temperature and harness cool winds, while not overshadowing solar PV installations (when part of design)

9. Reduce the urban heat island effect by complying with the Green Star Design and As Built credit. This includes, but is not limited to, providing shading to paths, play spaces, seating areas and car parks, maximising site vegetation cover and appropriate solar reflectance index for roofing, paths and car park materials

10. Identify demonstration sites for green walls, roofs or facades, particularly in areas exposed to high temperatures and where tree canopy is limited

### Detailed design
### Habitat and ecosystem maintenance/protection

11. Revegetation plans must be developed, where needed, and especially where adjacent to green space, including open space. The plan must specify:
   - The area to be revegetated, or other vegetation options
   - A species list
   - Plant density
   - Future maintenance requirements
   The procedure for reinstatement works must be agreed before the design is approved

12. When required, the project’s environmental management plan must include measures to prevent runoff to watercourses, protect existing vegetation, including the root area of significant canopy trees

### Construction

13. Ensure staff, suppliers, consultants, developers, customers and contractors operating in open space are aware of and accountable to council’s environmental management practices and principles as outlined in the *Maroondah Tree Protection Guidelines*

14. If pesticides are required, follow the Maroondah Pesticide Application Procedures

### Documentation required

- Vegetation survey and site assessment (including biodiversity and habitat assessment as/if required)
- Vegetation management plan (including tree and vegetation protection)
- Revegetation Plan/Landscape Plan
- Planning permit (if required)
- Access to Council Land Permit (if required)
## 4.7 Waste

<table>
<thead>
<tr>
<th>Waste</th>
<th>Objectives</th>
<th>Project stage</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Maximise the avoidance, reduction, reuse and recycling of materials during demolition, construction and operation of buildings</td>
<td>Scoping</td>
<td>1. Minimise building footprint by identifying feasibility of co-locating services and design to maximise use of facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Assess retention of existing building façade and major structures (if appropriate) considering value for money, longevity of asset and lifecycle costs including operational, maintenance and renewal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concept design</td>
<td>3. Design to encourage long building life and easy adaptation to future new uses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Detailed design</td>
<td>4. All buildings to be designed with separation, storage and collection space for waste and comingled recycling with easy access to bins for building users to facilitate separation of waste and recyclables</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Demolition &amp; construction</td>
<td>5. Develop and implement demolition (if applicable) and construction waste minimisation and management plan.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6. Building contractor to develop and implement demolition (if applicable) and construction waste minimisation and management plan to achieve minimum waste reduction target of diverting 80% of total waste from landfill. Provide report to council indicating how 80% minimum reuse and recycling target for demolition and construction waste (by weight) was achieved. Identify which materials can be reused onsite, reused by council on other projects, recycled and sent to landfill. See the Maroondah A-Z of Waste and Recycling Guide for potential local recyclers: <a href="http://www.maroondah.vic.gov.au/AZRecyclingGuide.aspx">www.maroondah.vic.gov.au/AZRecyclingGuide.aspx</a></td>
</tr>
<tr>
<td>Documentation required</td>
<td>Construction and demolition Waste Management Plan</td>
<td></td>
<td>Building plans to indicate waste, comingled recycling and organic waste (if applicable) separation, storage and collection areas</td>
</tr>
<tr>
<td></td>
<td>Report on construction and demolition waste indicating volumes recycled, sent to landfill and reused indicating how waste reduction target was achieved</td>
<td></td>
<td>Operational Waste Management Plan</td>
</tr>
</tbody>
</table>
## 4.8 Water & Stormwater Management

### Water Efficiency and Stormwater Management

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Requirements</th>
</tr>
</thead>
</table>
| - Reduce potable water use  
- Use fit for purpose alternative water sources  
- Improve stormwater quality, reduce stormwater flow and encourage reuse  
- Plan and design to increase resilience to flooding and drought and integrate with stormwater quality, quantity and urban greening objectives | 1. Design to mitigate flooding issues, particularly for sites in a flood prone area (see Council’s flood mapping) with design to integrate multiple benefits (i.e. improvements to stormwater quality, stormwater capture and reuse).  
Discuss holistic opportunities to mitigate precinct flooding with Council’s Engineering and Building Services  
2. For buildings on land liable to overland flow or flooding obtain formal consent from Council to build on land liable to flooding or overland flow pursuant to Building Regulations 802 and 806.  
4. Consult with Council’s Water Sensitive City Group to identify opportunities for an holistic approach to design for water efficiency, alternative water sources, stormwater management and irrigation/urban greening |  

### Concept design

#### Climate change risks

<table>
<thead>
<tr>
<th>Limiting stormwater runoff and flow rate</th>
<th>5. Limit site discharge and provide detention and drainage as specified in the MCC Engineering Development Design Guidelines. Integrate solutions with requirements of items 8, 9, 11 &amp; 15 of this Water &amp; Stormwater section.</th>
</tr>
</thead>
</table>
| Flooding                                | 6. For buildings on land liable to overland flow or flooding, (refer to Council’s flood modelling to identify affected land), assess risks (i.e. flood water ingress; impact on neighbouring properties, safe access maintained during flood events) and if applicable identify mitigation measures in drainage design. Refer to MCC Engineering Development Design Guidelines for detailed requirements  
7. Avoid box gutters where possible. If box gutters are the only option, design to prevent water ingress in buildings |
| Concept design                          | 8. Rainwater tanks installed where there is a suitable re-use for the water. Tanks must be connected to toilets and/or garden irrigation, or other suitable uses. Consider opportunities for distributed water storage (e.g. minimal rainwater use needed for the building but large opportunity for rainwater capture and off site use, such as for irrigation) |

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Where used, water pumping system to be energy efficient

10. Assess feasibility of future installation of grey water system with building designed to easily allow for future installation of system (e.g. easy access to pipes from shower and/or washing machines)

11. Minimise impervious surfaces to encourage rainwater to soak into the ground, increase cooling and minimise stormwater pollution. If 35% or more of the site is being developed refer to the [MCC Engineering Development Design Guidelines](#) for permissible site discharge requirements.

12. Meet best practice objectives for urban stormwater quality for onsite treatment as outlined in the [Urban Stormwater Best Practice Environmental Management Guidelines](#) through achieving a minimum 100% score from the Melbourne Water STORM tool, or as shown with MUSIC modelling for more complex sites.

13. Maximise car park area connected to a raingarden, or other WSUD or passive stormwater treatment, to help meet the stormwater quality objectives for onsite stormwater quality treatment. Use the [Urban Stormwater Best Practice Environmental Management Guidelines](#). Refer to WSUD Engineering Procedures: Stormwater (Melbourne Water) for design guidance and the [WSUD Maintenance Guidelines: a guide for asset managers](#) (Melbourne Water).

14. Appliances, fittings and fixtures to be water efficient and meet the following WELS standards:

- Appliances (dishwashers, washing machines): 5 star WELS
- Showerhead: 3 star WELS
- Shower taps: push button or sensor time delay with set temperature
- Taps: 6 star WELS (push button or sensor time delay for bathroom basins)
- Toilets: 4 star WELS
- Urinals: 6 star WELS, sensor operated

15. Where garden watering is required (i.e. in times of drought and to maintain soil and vegetation health and to aid cooling) drip irrigation system to be installed with moisture sensors and connected to rainwater/stormwater storage system and/or landscape design to include passive irrigation of garden and trees. Also refer to the [Maroondah Tree Maintenance Guidelines](#).

16. Buildings with separate tenancies to have individual water meters for water billing purposes

17. Monitoring of potable and alternative water use to be connected to the building management system for buildings with significant water use (such as aquatic centres and administration buildings)
### Construction Waterway Health

18. During construction, measures to prevent pollutants from entering waterways such as sediment fencing/barriers must be installed and pollution management must comply with *Maroondah Engineering Development Design Guidelines* and Maroondah Local Law No. 11.

| Documentation required | Site management plan for waterway protection from pollution during construction phase showing compliance with Maroondah Local Law No. 11 and *The Maroondah Engineering Development Design Guidelines*  
Building plans to include water efficient fitting, fixtures and appliances and WELS rating  
Building and landscape plans to include rainwater tank location and size (litres) roof area draining to the tank and rainwater connection points (eg toilets, irrigation system and other uses)  
Tankulator or other modelling for rainwater tank specification  
STORM report, or MUSIC modelling  
Integrated water cycle management plan  
Drainage, flooding and detention documentation requirements as specified in the *MCC Engineering Development Design Guidelines*  
Landscape drawings to include location and measurements for raingarden and/or other water sensitive urban design measure (WSUD)  
Maintenance manual/guide to be provided for WSUD |

### Measuring our Progress

The effectiveness of the ESD Policy and Guidelines in influencing the sustainability outcomes of building projects will be monitored and reviewed to assist with continual improvement.

The indicators to measure our progress are:
- Increase in the proportion of building projects that achieve the Policy Position standard or better
- Number of Green Star certified projects achieved
- As built ESD policy objectives achieved compared to ESD requirements in project brief
- Reduction in greenhouse gas emissions, potable water use, improved stormwater quality and landscape outcomes compared to a standard building
- Proportion of projects where process (including decision making process) has been evaluated for effectiveness and improvement
- Number of projects that include elements of community and staff engagement
- Increased usage of building vulnerability assessment methodology measured by identification of climate adaptation actions.

Monitoring and evaluation will be undertaken by Integrated Planning, with assistance from Assets and the Project Manager. ESD outcomes will be reported annually to stakeholders including the Corporate Management Team (CMT), Management Group, the Strategic Asset Management Working Group (SAMWG) and the Maroondah Environment Advisory Committee (MEAC).
Reference Documents/Resources


Arup, 20 October 2015, EAGA & NAGA, Building Vulnerability Assessments: Assessment sheets, [eClip record number 17/8559]


Australian Window Association, Window Energy Rating Scheme, www.wers.net/wers-home


Carpet Institute of Australia, Australian Carpet Certification Scheme, www.carpetinstitute.com.au


Global Green Tag, www.globalgreentag.com/


Green Building Council of Australia, Green Star Design & As Built - Submission Guidelines [latest version]


Maroondah City Council, 2014, Asset Management Policy, [eClip record number 14/71904]

Maroondah City Council, 2014, Asset Management Strategy, [eClip record number 14/72403]


Maroondah City Council, Draft Climate Change Risk and Adaptation Strategy, [link to be added once finalised]


Maroondah City Council, Pesticide Application Procedures [need link]

Maroondah City Council, 1997, Site of Biological Significance, [eClip record numbers 16/20924, 16/20939, 16/20943]
Maroondah City Council, *Sustainability Strategy 2016 to 2020*

Maroondah City Council, *Tree Policy*

Maroondah City Council, *Tree Protection Guidelines*

Maroondah City Council, *Tree Planting Guidelines*

Maroondah City Council, *Tree Maintenance Guidelines*

Maroondah City Council, *Water Sensitive City Strategy*


Melbourne Water, Stormwater Management (WSUD)

Melbourne Water, Stormwater Treatment Objective-Relative Measure (STORM),
https://storm.melbournewater.com.au


Municipal Association of Victoria, Built Environment Sustainability Scorecard (BESS),
http://bess.net.au

Recharge Scheme Australia, www.rechargescheme.org.au

Walk Score, www.walkscore.com
Glossary

Asset: Within Maroondah City Council assets are managed by Council on behalf of the Community to provide a broad range of services. Assets are a physical component of a facility, which has value, enables services to be provided, and has an economic life of greater than 12 months. Some of these asset types are buildings, car parks, parks and reserves, stormwater drainage pipes and structures and furniture and equipment.

BESS: an online sustainability assessment tool developed by the Council Alliance for a Sustainable Built Environment (CASBE), an alliance of Victorian Councils working to improve the sustainability of the built environment, to assess the sustainability of building projects at the design stage.

Council buildings and surrounding assets: Council buildings and surrounding assets are assets managed by Council on behalf of the community to provide a broad range of services including leisure services, community services, arts and cultural services, aged services, children’s services. The surrounding assets are the car parks, paths and open space that can be impacted by and/or contribute to the building project.

Ecological Footprint: The amount of biologically productive land and water needed to produce all the resources consumed by a person, population, or activity and to absorb the waste produced, including greenhouse gas emissions. The ecological footprint for Australians is 9.3 global hectares per person, while the planet’s resources will only allow 1.7 global hectares per person.

Environmentally Sustainable Design (ESD): Building design that seeks to improve building performance, reduce environmental impacts, resource use and waste and create healthy environments for occupants.

Green Star: Developed by the Green Building Council of Australia (GBCA), buildings can be Green Star accredited for the environmental sustainability of their design and/or construction; fit outs and their operational performance. Buildings are accredited through an assessment by a third party and can achieve between a 4-6 star accreditation.

Green Star Financial Transparency Research Paper: Developed by the Green Building Council of Australia in 2016, this research paper uses data from 30 Green Star projects that were awarded the Green Star Financial Transparency Innovation Challenge for building design and/or construction. The Challenge seeks to provide more information about the costs and benefits of sustainable buildings.

Gross floor area: A building’s total floor area including all roofed areas, measured from the outside of external walls or the centre of party walls.

Independent Commissioning Agent: A role that can be filled by one or more people who advocate for, and report directly to, the project owner. They are independent of any contractor, subcontractor or consultant who has been involved in the design or installation of the nominated building systems. They are a registered professional engineer or qualified technician with demonstrated knowledge on nominated systems commissioning.

Lifecycle cost: The total cost of an asset throughout its useful life taking account of the planning, design, construction, acquisition, operational, maintenance, rehabilitation and disposal costs.
Open space: Any parcels of land within Maroondah that is managed by Council or other public authorities and is accessible to the public for the purpose of community outdoor use or environmental protection.


Project manager: The individual responsible for managing a project.

Project sponsor: Main driving force of a project to whom the project manager reports – such as Executive Management Team.

Project Steering Group: The group that monitors the project and provides guidance to the project sponsor or manager.

Project Working Group: The group that comes together to contribute their expertise to achieve stated objectives.

Relevant service areas: Council service areas who can provide input and advice on ESD relevant to their area of expertise (e.g. Operations for urban ecology; Engineering & Building Services for stormwater)

Renewal: Includes any work that is focused on refurbishing, rehabilitating, renovating, or restoring an existing asset to its required functional condition, and providing enhanced longevity for the existing asset through an extension to its useful life. Renewal also includes the replacement of an existing asset with a new asset of equivalent capacity or performance capability.

Sustainable Design Assessment (SDA): A simple sustainability assessment that indicates how a project will address sustainability objectives, targets and standards – in this case of the ESD Policy for Council Buildings and the ESD Policy Guidelines for Council Buildings requirements.

Sustainable Management Plan (SMP): A detailed sustainability assessment that indicates how a project will address sustainability objectives, targets and standards and how the performance outcomes will be achieved – in this case of the ESD Policy for Council Buildings and the ESD Policy Guidelines for Council Buildings requirements. The SMP must also provide a schedule for implementation, ongoing management, maintenance and monitoring and how the ESD elements and practices can be maintained over time.

User Groups: Existing and future users of Council facilities.

Water Sensitive Urban Design (WSUD): An holistic approach to water management that integrates urban design and planning with social and physical sciences in order to deliver water services and protect aquatic environments in an urban setting. A WSUD approach could include the integration of raingardens and wetlands in an urban area to manage stormwater.