

## Sustainable Buildings Policy

|                                     |                                |                          |   |
|-------------------------------------|--------------------------------|--------------------------|---|
| Objective ID:                       | A6704055                       | Directorate:             | Engineering Services                          |
| Authority:                          | Council                        | Responsible Officer:     | Manager City Projects and Capital Improvement |
| Policy Type:                        | Discretionary                  | Version Number:          | 02  |
| 1 <sup>st</sup> Adopted by Council: | 09/10/2017<br>Minute No. 2.5.4 | Last Adopted by Council: | 24/08/2020<br>Minute No. 4.2.4                |
| Review Period                       | Every 2 Years                  | Next Review              | July 2022                                     |

### 1. Purpose

The purpose of the Sustainable Buildings Policy (“the Policy”) is to incorporate environmentally sustainable design principles into the design, construction, operation, management and disposal of buildings owned and managed by Council.

### 2. Background

On the 28<sup>th</sup> of January 2020, Council adopted Notice of Motion No. 75, declaring a Climate and Ecological Emergency. This motion recognises the pressing nature of the global climate emergency and Council’s duty of care to provide a comprehensive, strategic response for the protection of the broader community. It also validates Australia’s commitment to the Paris Agreement of 2016, which aims to limit increasing global average temperatures to 1.5°C above pre-industrial levels through accelerated climate action.

The Greater Dandenong Climate Emergency Strategy 2020-30 will provide a further strategic framework of actions for mitigation and adaption to the impacts of climate change. The strategy provides a clear vision for Council to respond to climate change, supported by a series of headline targets.

Vision: *The City of Greater Dandenong a resilient, net zero carbon city.*

Headline targets: *Net zero carbon emissions for Council by 2025 and 100% renewable energy for Council by 2025.*

High-level key priorities and objectives supporting the Sustainable Buildings Policy are outlined in the Council Plan 2017-21 – they include:

- A healthy, liveable and sustainable city;
- A city planned for the future;
- A diverse and growing economy; and
- An open and effective Council.

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In conjunction with the Greater Dandenong Climate Emergency Strategy 2020-30, the Sustainability Strategy 2016-30 sets out the City of Greater Dandenong's vision for a sustainable future and provides the strategic framework to implement it.

*Vision: By 2030, the City of Greater Dandenong is one of the most sustainable cities in Australia.*

## 3. Scope

Council is committed to creating and maintaining a sustainable built environment through the full lifecycle, from conception to disposal, to support the achievement of its climate change targets. Council owns nearly 300 buildings – valued at over \$333 Million. This policy recognises the significant role the built environment plays in the City of Greater Dandenong's emissions profile.

This Policy applies to all City Improvement Program (CIP) projects including the maintenance, renewal (including refurbishments, retrofits, and specific sustainability activities), replacement, upgrade, expansions, disposals and the construction of buildings as defined in the Asset Management Strategy.

The Sustainable Building Policy applies to all types of Councils buildings including: administrative offices; leisure and aquatic facilities; libraries; community buildings; sports ground pavilions; town halls; child care and health centres; works depots; and other Council buildings.

The Policy covers all buildings where Council has an ownership or management responsibility.

## 4. Human Rights and Responsibilities Charter – Compatibility Statement

All matters relevant to the Victorian Human Rights and Responsibilities Charter have been considered in the preparation of this Policy and are consistent with the standards set by the Charter. The Community Engagement Policy and Planning Framework will ensure that stakeholders across the City of Greater Dandenong have an opportunity to participate in public life and inform decision making, consistent with Section 18 of the Charter.

## 5. References

### 5.1. Plans, Strategies and Policies

- *Climate Change Emergency Strategy 2020-30*
- *Imagine 2030 Community Plan*
- *Council Plan 2017-21*
- *Community Safety Plan 2015-22*
- *Community Wellbeing Plan 2017-21*
- *Sustainability Strategy 2016-30*
- *Asset Management Policy 2015*
- *Asset Management Strategy 2015-22*
- *Procurement Policy 2017*
- *Risk Management Policy 2015*

- *Community Hubs Framework 2015*
- *Community Facilities Management Policy 2013*
- *Sports Facilities Plan 2015*
- *Cycling Strategy 2017*
- *Public Car Share Policy 2019*
- *Public Electric Vehicle Charging Infrastructure Policy 2019*
- *Waste and Litter Strategy 2015-20*
- *Reconciliation Action Plan 2017-19*
- *Urban Tree Strategy 2018-28*
- *Greater Dandenong Planning Scheme (Clause 22.06 – Environmentally Sustainable Development)*

## 5.2. Programs

- *City Improvement Program (CIP)*

## 5.3. Legislation

### State Legislation

- The *Local Government Act 2020* provides the framework for the establishment and operation of Councils, the responsibility of Councils to promote climate change awareness, adaptation, and mitigation, and the requirement to consider social, economic and environmental sustainability in all processes and procedures;
- The *Climate Change Act 2017* provides the framework that outlines the role and responsibility of Councils in response to climate change and sets overall targets for the state; And
- The *Planning and Environment Act 1987* provides the framework for planning the use, development and protection of land in the interest of the community both now and in the long-term.

### Federal Legislation

- The *National Construction Code (2019)* identifies the minimum requirements (including energy and water measures) for the design, construction and performance of buildings.

## 5.4. Other Guidance

- *Sustainable Design Assessment in the Planning Process (SDAPP)*
- *Built Environment Sustainability Scorecard (BESS)*
- *Green Star – Design and As-Built Rating Tool*
- *Green Star – Performance Rating Tool*
- *National Australian Built Environment Rating System (NABERS)*
- *Green Building Council of Australia (GBCA) – A Carbon Positive Roadmap (2018)*
- *United Nations General Assembly – Sustainable Development Goals (2015)*

## 6. Definitions

**Asset:** A physical component of a facility which has value, it enables services to be provided and has an economic life of greater than 12 months.

**Asset Management:** The systematic and coordinated activities and practices of an organisation to optimally and sustainably deliver on its objectives through the cost-effective lifecycle management of assets.

**Budget:** The budget is the total design and construction value of a project, determined by a project's category and the ESD standard outlined in **Table 1 – Project Categories**

**Buildings:** A building is a construction with walls, a roof and stands permanently in one place, whereas a structure is defined as a construction without a solid roof or walls. For entry into the building asset register, the minimum floor space of a building is two m<sup>2</sup>, and the minimum dollar value of a building is \$5,000. For the purpose of this policy, the definition of a building includes the property and the land that the building is located on.

**Building Operations and Maintenance Guide (O&M Guide):** This is a source of up-to-date, relevant information for the facilities manager to ensure smooth operation of the building.

**Building Management System (BMS):** A computer-based software and hardware system capable of remotely monitoring and controlling the building's mechanical and electrical systems. This includes *Internet of Things (IoT)* based monitoring equipment capable of remotely monitoring, controlling and reporting a buildings performance to ensure equipment is operating to its calibrated performance requirements. A BMS system can also be applied to control lighting, access and *Closed-Circuit Television (CCTV)*.

**Building User Guide (BUG):** This is a source of up-to-date, relevant information for the building user to ensure smooth operation of the building.

**Built Environment Sustainability Scorecard (BESS):** Is an assessment tool created by local governments in Victoria, managed by CASBE. It assesses the sustainability of a building's design at the planning stage.

**Business Case (Pre-Bid):** Involves the elicitation of information from the community identifying need, research, scoping, preparation and development of a project including investigations, stakeholder consultations, obtaining permits, conceptual design, high-level scheduling and lifecycle funding estimates.

**Business Case (Detailed):** Involves a detailed analysis of the project capital and operational costs versus the resulting benefits, both tangible and intangible. Development of an effective Business Case including introduction, analysis of the project, recommended option and justification. Approval is sought from Council before proceeding with detailed preliminary budgeting. A business case is intended to demonstrate that the advantages delivered by the project exceed the value of the financial cost to implement.

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**Construction:** Relates to the building delivery of Minor Capital Works, Medium Capital Works or Major Projects, and may be staged over a few years to deliver the project.

**Council Alliance for a Sustainable Built Environment (CASBE):** Is an Association of Victorian Councils committed to the creation of a sustainable built environment.

**Disposal:** Is any of the activities associated with the disposal of a decommissioned asset. At the end of an asset's serviceable life, an asset may become surplus to requirement for a number of reasons including under-utilisation, obsolescence, provision exceeds required level of service, policy change, or service provided.

**Facilities:** Are ancillary assets other than buildings within the property boundary such as carparks, off street access roads, off street lighting, bollards, signage, pathways, street furniture and garbage bins, garden beds, trees and vegetation. All items that service the building, above and below ground.

**Green Star:** Is a voluntary sustainability rating system for buildings in Australia, managed by the Green Building Council of Australia. It assesses the sustainability of buildings at the design, construction and operational stages.

**Lifecycle:** The time interval that commences with the identification of the need for an asset and terminates with the decommissioning of the asset or any liabilities thereafter.

**Maintenance:** Is the on-going, day-to-day work activity required to keep the assets (including buildings and facilities) serviceable and to perform as intended.

**NABERS:** Is an environmental rating tool that measures the energy, water, waste and indoor environmental performance of existing buildings during operation. It is managed by the NSW Department of Environment & Heritage on behalf of the Federal, State and Territory Governments.

**Net Zero Emissions:** Refers to achieving net zero carbon emissions by balancing a measured amount of carbon released with an equivalent amount sequestered, generated or offset, by the asset's operation.

**Operations:** This is the active process of utilising an asset that consumes resources such as manpower, energy and materials.

**Refurbishment:** Includes works to upgrade or enhance existing buildings and facilities.

**Renewal / Replacement:** Includes the restoration, or like-for-like replacement of existing assets to their original condition and capacity

**Sustainable Development:** Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

**Sustainable Development Goals:** Developed by the United Nations General Assembly in 2015, these 17 goals expand upon the key areas of Sustainable Development and set targets for completion by 2030.

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**Sustainable Design Assessment in the Planning Process (SDAPP) Factsheets:** The SDAPP factsheets provide detailed advice on sustainable building design at the planning stage.

**Upgrade:** Includes work related to the extension or augmentation of an asset in response to growth or an increase in the defined levels of service.

**Waste:** Any energy outcome resulting from an action that is unnecessary or can otherwise be achieved by simpler means requiring less energy.

## 7. Council Policy

### 7.1. Policy Vision

The Policy ensures that all capital works, including construction and refurbishment, renewals and disposals, of Council buildings minimises adverse environmental impacts, such as excessive energy consumption, greenhouse gas emissions, water use, and generation of waste, during the construction and operational phases of a building's life. The Policy will also guide and influence organisational practices to manage the social, environmental and financial aspects of Council Buildings.

### 7.2. Policy Objectives

The Policy will aim to deliver a range of improved sustainability outcomes and benefits to Council, the community and the environment including:

#### ***Environmental benefits***

- Reduced demand for limited and non-renewable resources such as water, materials and energy derived from fossil fuels
- Reduced greenhouse gas emissions
- Reduced pollution, toxic by-products and waste production
- Demonstrate environmental leadership to the community
- By identifying and eliminating waste

#### ***Economic benefits***

- Resilient, futureproofed assets prepared to adequately deal with the impacts of climate change
- Lower operational costs through increased energy, water and waste efficiencies and use of automated / intelligent systems.
- Offsetting rising utility prices
- Better financial performance through consideration of building lifecycle when designing, operating, and upgrading Council buildings
- Advantage when applying for funding or grants related to ESD considerations
- Increased attractiveness of Council buildings available for rent, due to lower utility cost

#### ***Social benefits***

- Improved health and wellbeing outcomes for staff, tenants and other building users
- Tangible display of environmental leadership and corporate responsibility to the community
- Increased staff, community and stakeholder pride
- Improved comfort, resilience, safety and amenity of Council buildings

## 7.3. Financial Responsibility

Council is obligated to deliver buildings that are environmentally, socially, and economically sustainable. The cost of construction, maintenance, refurbishment, upgrade, and disposal works will be considered based on benefits and financial costs. The ESD features of any given undertaking will be considered holistically and with respect to payback periods. Council will ensure that value for money, social, environmental and economic factors are all carefully considered as an integral component of the procurement process.

## 7.4. Policy Standards

Council sets the following standards for building and facility projects delivered through the City Improvement Program:

**Table 1 – Project Categories and ESD Performance Standards**

| Category                 | Council Building Type   | New Buildings  | Existing Buildings  |
|--------------------------|---|--|---|
| Major Projects<br>≥\$10M | Civic Offices /Town Halls, Libraries, Aquatic Recreation Centres, Sports Stadiums, Larger Community Centres, Arts & Entertainment Centres | <p>Minimum 5 Stars Green Star Design and As Built (or equivalent). The design specifications must be certified or peer reviewed by an independent third party.</p> <p>For office buildings:<br/>Minimum 5.5 Stars NABERS Energy (without Green Power).</p> <p>Minimum 5 Stars NABERS Water (without bulk-purchased recycled water).</p> <p>The NABERS Ratings will be validated through certification within 2 years of project completion.</p> <p>All buildings must be designed to achieve net zero carbon emissions through a combination of ESD principles, on-site renewable energy generation, and Power Purchasing Agreements (PPAs) or carbon offsets.</p> <p>On-site solar photovoltaic arrays generating at least 25% of the building's predicted peak electricity usage (adjusted for</p> | <p>Minimum 4 Stars – Green Star Design and As Built (or equivalent). The design specifications must be certified or peer reviewed by an independent third party.</p> <p>For office buildings:<br/>Minimum 4.5 Stars NABERS Energy (without Green Power).</p> <p>Minimum 4 Stars NABERS Water (without bulk-purchased recycled water).</p> <p>The NABERS Ratings will be validated through certification within 18 months of project completion.</p> <p>Building design and operation aimed at achieving net zero carbon emissions.</p> <p>On-site solar photovoltaic arrays generating at least 15% of the building's predicted peak electricity usage (adjusted for seasonality) must be installed.</p> <p>If existing natural gas systems are present, a feasibility review</p> |

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|  |  | <p>seasonality) must be installed.</p> <p>Natural gas is not permitted under any circumstance.</p> <p>An intelligent IoT-based BMS must be installed for the purposes of monitoring and control. This must be of open architecture and non-proprietary.</p>   | <p>detailing the possibility and cost associated with a transition to a comparable electric equivalent must be completed.</p> <p>An intelligent IoT-based BMS must be installed for the purposes of monitoring and control. This must be of open architecture and non-proprietary.</p>   |
| <p><b>Moderate Projects</b><br/><b>≥\$1M – \$10M</b></p> | <p>Pavilions, Childcare and Maternal and Child Health Centres, Aged Care/ Senior Citizens Centres, Neighbourhood Houses, Community Centres/Halls</p> | <p>Minimum 5 Stars Green Star Design and As Built (or equivalent). The design specifications must be peer reviewed by an independent third party.</p> <p>For office buildings:<br/>Minimum 5.5 Stars NABERS Energy (without Green Power).</p> <p>Minimum 5 Stars NABERS Water (without bulk-purchased recycled water).</p> <p>The NABERS Ratings will be validated through certification within 2 years of project completion.</p> <p>All buildings must be designed to achieve net zero carbon emissions through a combination of ESD principles, on-site renewable energy generation, and Power Purchasing Agreements (PPAs) or carbon offsets.</p> <p>Natural gas in not permitted under any circumstance.</p> | <p>Minimum 4 Stars Green Star Design and As Built (or equivalent). The design specifications must be certified or peer reviewed by an independent third party.</p> <p>For office buildings:<br/>Minimum 4.5 Stars NABERS Energy (without Green Power).</p> <p>Minimum 4 Stars NABERS Water (without bulk-purchased recycled water).</p> <p>The NABERS Ratings will be validated through certification within 18 months of project completion.</p> <p>Building design and operation aimed at achieving net zero carbon emissions.</p> <p>If existing natural gas systems are present, a feasibility review detailing the possibility and cost associated with a transition to a comparable electric equivalent must be completed.</p> |
| <p><b>Moderate Projects – 2</b></p>                      | <p><b>&lt;\$1M</b><br/><b>≥\$250K</b></p>  | <p>Minimum score of 60% or higher (Excellent) – Built Environment Sustainability Scorecard (BESS) or equivalent</p> <p>+ Minimum best practice standards in the Sustainable Buildings Categories as identified in the SDAPP Factsheets.</p> <p>+ Best practice standards under Disposals where applicable</p>   | <p>Minimum score of 50% (Best Practice) – Built Environment Sustainability Scorecard (BESS) or equivalent</p> <p>+ Minimum best practice standards in the Sustainable Buildings Categories as identified in the SDAPP Factsheets.</p> <p>+ Best practice standards under Disposals where applicable</p>  |

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| <p><b>Moderate Projects – 3</b></p> | <p><b>&lt;\$250K<br/>≥\$50K</b></p> | <p>Minimum score of 50% (Best Practice) – Built Environment Sustainability Scorecard (BESS) or equivalent</p> <p>+ Minimum best practice standards in the Sustainable Buildings Categories as identified in the SDAPP Factsheets.</p> <p>+ Best practice standards under Disposals where applicable</p>  | <p>Minimum best practice standards in the Sustainable Buildings Categories as identified in the SDAPP Factsheets.</p> <p>+ Best practice standards under Disposals where applicable</p>   |
| <p><b>Minor Projects</b></p>        | <p><b>&lt;\$50K</b></p>             | <p>Minimum best practice standards in the relevant Sustainable Building Categories as identified in the SDAPP Factsheets.</p> <p>Best practice should be used to eliminate inefficiencies and increase environmental value in installation of fit out appliances. All installations should be within one star of the highest energy/water rating currently available for the particular appliance at the time of design.</p>   | <p>Minimum best practice standards in the Sustainable Buildings Categories as identified in the SDAPP Factsheets.</p> <p>Where applicable to end-of-life replacements of fit out appliances, best practice should be used to eliminate inefficiencies and increase environmental value. All end-of-life substitutions should be within one star of the highest energy/water rating currently available for the particular appliance at the time of refurbishment.</p> |
| <p><b>Disposal</b></p>              |                                     | <p>Demolition – demonstrate that a minimum of 90% of the waste generated during construction and demolition has been diverted from landfill (noting that this may not be possible for buildings of a certain age due to the presence of hazardous materials).</p> <p>Landscape – achieve a minimum 1 point using Green Star Ecological Value Calculator for the site.</p>  |   |
| <p><b>ALL</b></p>                   |                                     | <ul style="list-style-type: none"> <li>▪ Ongoing maintenance and performance costs will be considered in the design and delivery of all building projects. Conduct life-cycle cost and payback calculation on specific building features with two or more product options.</li> <li>▪ Meeting standards to be part of the City Improvement Program – Project Reporting Process.</li> <li>▪ For all projects ≥\$5M that affect building services, a third party Independent Commissioning Agent must be engaged.</li> </ul> |   |

**Note:** If the scope of the project expands and its budget changes, then the project’s minimum ESD requirements must be reviewed and updated to meet the Minimum ESD Standards as defined in **Table 1 – Project Categories and ESD Performance Standards and Appendix 1 – Minimum ESD Standards.**

## 7.5. Business Cases

While Council strongly believes in value for money under the terms stipulated in point 7.3. – Financial Responsibility, Council also has an obligation to invest in infrastructure and design processes that will make a positive contribution to the Greater Dandenong region’s resilience to climate change processes.

Measures that contribute in a meaningful way to Council’s net zero carbon emissions and renewable energy targets, or significantly reduce consumption of energy, water and other resources, will be prioritised in the first instance.

In order to ensure financial obligations and ESD considerations are adequately disseminated and reviewed as per the intent of Section 7.3, Council requires the following Business Case procedures to be adhered to:

### **Projects ≥ \$5 million**

For projects ≥ \$5M a Detailed Business Case, should include a cost-benefit analysis on the minimum ESD standard, to support the project budget, must be:

- Peer reviewed at the concept design stage by an internal member of the relevant team
- Reviewed and approved by an appropriate member of the Sustainability Planning Unit to ensure the ESD specifications are appropriate
- Presented by the Project Manager to Council during the Detailed Design Phase.

### **Projects ≤ \$5 million:**

For projects ≤ \$5M a Detailed Business Case, AS ABOVE:

- Peer reviewed at the concept design stage by an internal member of the relevant team
- Reviewed and approved by an appointed member of the Sustainability Planning Unit to ensure the ESD specifications are appropriate
- Presented by the Project Manager to the Executive Management Team during the Detailed Design Phase.

## 7.6. Roles and Responsibilities

### **Council**

- Councillors – Leadership group of elected community representatives, that:
  - Act as custodians and stewards for the sustainability resilience of Council’s buildings and facilities and make final budget decisions via the Capital Improvement Program in each Annual budget.

### **CEO and Executive Management Team (EMT)**

- Leadership group comprising of the CEO and Directors, that:
  - Promotes the sustainability and futureproofing of Council’s buildings and facilities to staff, Councillors and the broader community.

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- Directs the design and construction of sustainable buildings that meet the objectives and standards in the Policy.
- Guides the periodic review and update of the Policy.

## **Capital Works Committee (CWC)**

- Committee of staff from across Council, chaired by Director of Business, Engineering and Major Projects, and governed by a Terms of Reference, that:
  - Oversees the strategic direction and monitoring of the City Improvement Program, and application of the Policy objectives and standards.
  - Oversees the implementation of the City Improvement Program and the delivery of the Policy objectives and standards.

## **Project Advocate**

- Department Manager who acts as the 'Client' for the project, that:
  - Is responsible for providing oversight and support to Project Managers, to ensure that each project complies with the Policy, throughout the planning, coordination and delivery phases.

## **Project Management**

- Specialist Unit within Council, that:
  - Ensures the coordination and delivery of individual projects in compliance with the Policy.

## **Design and Sustainability**

- Specialist Unit within Council, that:
  - Provides advice, guidance and support on City Improvement Program projects to ensure that they comply with the Policy, especially during design phase of the project.
  - Reports on Council's performance against the Policy objectives and targets defined in relevant Sustainability Strategies and Plans.

## **Building Maintenance**

- Specialist Unit within Council, that:
  - Provides support on City Improvement Program projects ensuring compliance with the Policy, from an operational and maintenance perspective.
  - Manages the building's facilities efficiently, once occupied, to reduce the operational impacts on the Council's emissions profile, resource consumption, and rising costs of utility bills in collaboration with the Design and Sustainability Unit.

## **Project Working Group**

- Advisory group for the project that:
  - Is established to provide subject matter expertise about the project and its deliverables.

## **8. Implementation**

This stage in the City Improvement Program involves the continuous monitoring and reporting of the project against budget forecasts and baseline schedules, as well as the objectives and standards in the Policy.

## 8.1. Process

| Process   | Role                      | Responsibility  |
|---|---------------------------|---|
| <b>Capital Planning</b>                         |                           |   |
| <b>Pre-Bid Business Case and Bid Submission</b> | Project Advocate          | <ul style="list-style-type: none"> <li>▪ Elicits project specific information and negotiates with the community or users</li> <li>▪ Prepares Business Case in accordance with Section 7.5. and submits for internal review and approval to EMT.</li> <li>▪ Seeks advice and approval of Business Case from Design and Sustainability.</li> <li>▪ Seeks advice from Building Projects.</li> <li>▪ Includes feedback and Sustainable Buildings Policy requirements in project brief.</li> </ul>   |
|   | Design and Sustainability | <ul style="list-style-type: none"> <li>▪ Reviews proposed City Improvement Program project, reviews Business Case and ESD Specifications, and provides feedback to Project Advocate regarding the Sustainable Buildings Policy and its wider implications.</li> </ul>   |
|   | Building Maintenance      | <ul style="list-style-type: none"> <li>▪ Review project and provide feedback to Project Advocate.</li> </ul>  |
| <b>Bid Shortlisting</b>                         | Design and Sustainability | <ul style="list-style-type: none"> <li>▪ Check that bids meet the objectives and requirements in the Sustainable Buildings Policy.</li> </ul>   |
| <b>Bid Assessment</b>                           | Capital Works Committee   | <ul style="list-style-type: none"> <li>▪ Assesses the project against selection criteria including the objectives and requirements in the Sustainable Buildings Policy.</li> </ul>  |
| <b>Capital Delivery</b>                         |                           |   |
| <b>Detailed Planning Phase</b>                  | Project Manager           | <ul style="list-style-type: none"> <li>▪ For projects <math>\geq</math> \$5M appoint representatives from Design and Sustainability to the Project Working Group (where established). For projects <math>&gt;</math> \$4M; An opportunity for the Sustainability Team to define preference about the ESD consultant appointment for the project.</li> <li>▪ The ESD Consultant is required to be adequately briefed by the Project Manager. The Consultant is required to provide a return brief about the project ESD specifics to the Project Manager for review, discussion and approval at the Conceptual stage of the project.</li> <li>▪ For projects <math>\geq</math> \$5M; appoint representatives from Building Maintenance to the Project Working Group (where established).</li> <li>▪ For projects <math>\leq</math> \$5M; consult with Design and Sustainability.</li> <li>▪ Project Report to include how Sustainable Buildings Policy objectives and standards will be achieved.</li> </ul> |



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| Process  | Role                      | Responsibility   |
|--|---------------------------|--|
|  |                           | <ul style="list-style-type: none"> <li>For projects <math>\geq</math> \$5M; present a detailed Business Case to Council that includes a cost benefit analysis confirming the minimum ESD standards</li> <li>For projects, <math>\leq</math> \$5M; present a Business Case to the Executive Team that includes a cost benefit analysis on the minimum ESD standards, as identified in the Sustainable Buildings Policy.</li> </ul>  |
|  | Design and Sustainability | <ul style="list-style-type: none"> <li>For projects <math>\geq</math> \$5M; attend Project Working Group meetings (where established) and assist Project Manager in reporting on how project is meeting the minimum ESD requirements and actionable items prescribed in the Sustainable Buildings Policy. This includes ensuring building, services and civil designs are appropriate and in accordance with this Policy</li> <li>For projects <math>\leq</math> \$5M; provide advice and support to the Project Manager on minimum ESD and Sustainable Buildings Policy requirements. This includes ensuring building, services and civil designs are appropriate and in accordance with this Policy</li> <li>For all projects, check and approve Business Cases to ensure that Documentation and Specifications meet Sustainable Buildings Policy requirements.</li> </ul> |
|  | Building Maintenance      | <ul style="list-style-type: none"> <li>For projects <math>\geq</math> \$5M; attend Project Working Group meetings (where established) and provide requested feedback.</li> <li>For projects <math>\leq</math> \$5M; provide advice and requested feedback.</li> </ul>  |
| <b>Detailed Design and Final Approvals Phase</b> | Project Manager           | <ul style="list-style-type: none"> <li>To specify the methodology of how the project will achieve the Sustainable Buildings Policy objectives and requirements in the Project Management Plan (PMP).</li> </ul>  |
|  | Design and Sustainability | <ul style="list-style-type: none"> <li>For projects <math>\geq</math> \$5M; attend Project Working Group meetings (where established) and assist Project Manager in reporting on how project is meeting Sustainable Buildings Policy.</li> <li>For projects <math>\leq</math> \$5M; provide advice and support to the Project Manager on Sustainable Buildings Policy requirements.</li> <li>Check that Documentation and Specifications meet Sustainable Buildings Policy and minimum ESD requirements.</li> </ul>  |
|  | Building Maintenance      | <ul style="list-style-type: none"> <li>For projects <math>\geq</math> \$5M; attend Project Working Group meetings (where established) and provide requested feedback.</li> <li>For projects <math>\leq</math> \$5M; provide advice and requested feedback.</li> </ul>  |
| <b>Cost Refinement and</b>                       | Project Manager           | <ul style="list-style-type: none"> <li>Include life-cycle cost and payback calculations in Business Cases for all building features that are being considered for cost refinement.</li> </ul>  |

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| Process   | Role                                 | Responsibility  |
|---|--------------------------------------|---|
| <b>Procurement</b>  |                                      | <ul style="list-style-type: none"> <li>Project Report to include how project is achieving Sustainable Buildings Policy standards and minimum ESD requirements.</li> </ul>   |
|   | Design and Sustainability            | <ul style="list-style-type: none"> <li>For projects <math>\geq</math> \$5M; attend Project Working Group meetings (where established) and check that any suggested changes do not impact the project's ability to adhere to the specific ESD requirements stipulated in the Sustainable Buildings Policy or agreed sustainable design outcomes.</li> <li>For projects <math>\leq</math> \$5M; provide advice and check that changes do not impact how the project is meeting Sustainable Buildings Policy.</li> </ul> |
|   | Building Maintenance                 | <ul style="list-style-type: none"> <li>For projects <math>\geq</math> \$5M; attend Project Working Group meetings (where established) and provide requested feedback.</li> <li>For projects <math>\leq</math> \$5M; provide advice and requested feedback.</li> </ul>   |
| <b>Construction / Implementation (including Monitoring and Reporting)</b> | Project Manager                      | <ul style="list-style-type: none"> <li>Project review to demonstrate practicalities about how project is achieving Sustainable Buildings Policy objectives and requirements.</li> <li>Check that any changes do not adversely impact the meeting of Sustainable Buildings Policy objectives and requirements.</li> <li>For projects <math>\geq</math> \$5M; engage Independent Commissioning Agent.</li> </ul>  |
|   | Design and Sustainability            | <ul style="list-style-type: none"> <li>Ensure that changes do not adversely impact the meeting of Sustainable Buildings Policy objectives and requirements.</li> </ul>  |
| <b>Completion / Handover</b>  | Project Manager                      | <ul style="list-style-type: none"> <li>Project review to include how project has achieved Sustainable Buildings Policy standards.</li> </ul>  |
|   | Design and Sustainability            | <ul style="list-style-type: none"> <li>Assist Project Manager in Handover process.</li> </ul>   |
|   | Building Maintenance                 | <ul style="list-style-type: none"> <li>Review As Built drawings and functional documentation provided by the Project Delivery Team.</li> </ul>  |
| <b>Evaluation / Close</b>   | Project Manager                      | <ul style="list-style-type: none"> <li>Project review to include report on implementation costs and expected benefits of Sustainable Building Policy on project.</li> </ul>   |
| <b>Operations</b>   |                                      |   |
| <b>On-going Operations and Maintenance</b>                                | Facilities Manager / Project Manager | <ul style="list-style-type: none"> <li>Check that Buildings are managed in accordance with the Operations and Maintenance Guide, and provided functional documents relating to the building or facility.</li> <li>Ensure that any repairs/replacements are done in accordance with Operations and Maintenance Guide and ESD requirements.</li> <li>Ensure Buildings and Facilities are run in accordance with best</li> </ul>   |

| Process | Role | Responsibility   |
|---------|------|--|
|         |      | <p>practice principles of energy, water and resource efficiency.</p> <ul style="list-style-type: none"> <li>▪ Regularly monitor energy and water consumption and generation of waste using a combination of inhouse BMS information and remote 3<sup>rd</sup> party analytical data, utility bills, or manual meter readings, dependent on facility.</li> <li>▪ Develop and circulate quarterly summary reporting on the Energy Use, Water Use and Waste Generation in each building or facility.</li> </ul> |

## 8.2. Special Considerations

There are some cases where the sustainability standards or certain ESD items may not be achievable or practical.

Where compliance with sustainability standards or components of them have been assessed to provide inadequate environmental, social or economic benefit to warrant the investment required. This assessment will be made by relevant officers with representation from Council's Sustainability Planning unit and, where appropriate, with input from a suitably qualified person in sustainable building design. The decision to apply special considerations in this regard will be made by the relevant Director or Manager.

## 9. Monitoring and Reporting

The City Improvement Program will be monitored and reported on, to ensure projects comply with the endorsed Sustainable Buildings Policy objectives and standards, as well as relevance to Council goals, targets, performance indicators and statutory requirements.

Key performance indicators include:

- Percentage of projects meeting specific Sustainability Performance Targets as identified in the Sustainability Strategy 2016-30.
- Percentage of projects meeting specific Performance Targets as identified in the Climate Change Emergency Strategy 2020-30.
- Performance of Council buildings against specified Sustainability Performance Targets as identified in the Sustainability Strategy 2016-30.

This information will be reported on as part of Council's annual sustainability reporting methods, which is presented back to Council.

Quarterly summary reporting on the Energy and Water Use and Waste Generation in each building or facility will be completed and circulated internally. This may be based on BMS or 3<sup>rd</sup> party remote analytical monitoring data, utility/contractor invoices or manual meter readings, in order of preference and dependent on the highest level of data available at each facility.

# Greater Dandenong Policy

The effectiveness of the Policy will be reviewed every two years (to account for changes in ESD and technical standards) and reported back to Council.

## Appendix 1: Minimum ESD Standards

The ESD minimum requirements outlined below apply (as relevant to the mandated scope of works) to all capital works and building maintenance project works. The requirements are deliberately specific; they are written for direct insertion into tender specification documents or for individual product selection.

These should be discussed with Council's Sustainability Planning Unit to check which items are feasible for the scope of works. All internal projects will apply this policy from project conception to ensure that initial project scope and budget preparation includes these minimum requirements.

| Building Item  | Specification Requirement   |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|--|---|---------------------------|---------------|--------------|------|---|------|--|------|--|------|-----------------|------|--|------|----------------------------------|------|-----------------------------|------|------------------|------|
| <b>1. Building Envelope</b>  |   |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
| <b>1.1 - Building Fabric Insulation</b>  | Roof and ceiling, walls, and flooring construction achieves a 20% increase on the minimum required R-values specified in NCC Section J1.3, J1.5 and J1.6. Below is a table Total R-values for building fabric in Climate Zone 6 with a 20% increase.  |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | <table border="1"> <thead> <tr> <th>Building Fabric Component</th> <th>Total R-value</th> </tr> </thead> <tbody> <tr> <td>Roof/Ceiling</td> <td>3.84</td> </tr> <tr> <td>Wall components of a wall-glazing construction where the wall is less than 80% of the area of the wall-glazing construction where the wall is 80% or more of the area of the wall-glazing construction as per NCC Section J Part J1.5</td> <td>1.20</td> </tr> <tr> <td>Wall components of a wall-glazing construction where the wall is 80% or more of the area of the wall-glazing construction as per NCC Section J Part J1.5</td> <td>1.68</td> </tr> <tr> <td>Walls with surface density <math>\geq 220 \text{ kg/m}^2</math> or South orientation or shaded according to NCC Section J Figure J1.5</td> <td>2.76</td> </tr> <tr> <td>All other walls</td> <td>1.20</td> </tr> <tr> <td>Internal walls between conditioned and non-conditioned areas</td> <td>1.20</td> </tr> <tr> <td>Floor above non-conditioned area</td> <td>1.20</td> </tr> <tr> <td>Floor with in-floor heating</td> <td>3.90</td> </tr> <tr> <td>All other floors</td> <td>2.20</td> </tr> </tbody> </table> | Building Fabric Component | Total R-value | Roof/Ceiling | 3.84 | Wall components of a wall-glazing construction where the wall is less than 80% of the area of the wall-glazing construction where the wall is 80% or more of the area of the wall-glazing construction as per NCC Section J Part J1.5 | 1.20 | Wall components of a wall-glazing construction where the wall is 80% or more of the area of the wall-glazing construction as per NCC Section J Part J1.5 | 1.68 | Walls with surface density $\geq 220 \text{ kg/m}^2$ or South orientation or shaded according to NCC Section J Figure J1.5 | 2.76 | All other walls | 1.20 | Internal walls between conditioned and non-conditioned areas | 1.20 | Floor above non-conditioned area | 1.20 | Floor with in-floor heating | 3.90 | All other floors | 2.20 |
|  | Building Fabric Component   | Total R-value             |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | Roof/Ceiling  | 3.84                      |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | Wall components of a wall-glazing construction where the wall is less than 80% of the area of the wall-glazing construction where the wall is 80% or more of the area of the wall-glazing construction as per NCC Section J Part J1.5   | 1.20                      |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | Wall components of a wall-glazing construction where the wall is 80% or more of the area of the wall-glazing construction as per NCC Section J Part J1.5  | 1.68                      |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | Walls with surface density $\geq 220 \text{ kg/m}^2$ or South orientation or shaded according to NCC Section J Figure J1.5  | 2.76                      |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | All other walls   | 1.20                      |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | Internal walls between conditioned and non-conditioned areas  | 1.20                      |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | Floor above non-conditioned area  | 1.20                      |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
| Floor with in-floor heating  | 3.90  |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
| All other floors   | 2.20  |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
| <p>If using the Section JV3 method using a reference building, demonstrate a 20% improvement on the Reference Building. The Reference Building is a building which achieves minimal compliance with the NCC Section J DTS provisions.</p> <p>Retrofit insulation wherever possible into renovations and extensions and where any new air conditioning or heating systems are added.</p> <p>For large projects with an expected high use and ongoing frequency of artificial heating and cooling, thermal scanning is to be undertaken to the façade once the insulation has been installed and the internal plastering complete.</p> |   |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
| <b>1.2 - Building Sealing</b>  | All new buildings (including extensions and other works) must be designed to prevent unwanted air infiltration through building sealing. This includes: <ul style="list-style-type: none"> <li>• Thermal bridging to be avoided.</li> </ul>   |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |
|  | For works to existing buildings:  |                           |               |              |      |   |      |  |      |  |      |                 |      |  |      |                                  |      |                             |      |                  |      |

| Building Item                                  | Specification Requirement  |
|--|--|
|  | <ul style="list-style-type: none"> <li>All existing windows and doors to be sealed and weather-stripped.</li> <li>All existing exhaust fans to be fitted with self-sealing dampers.</li> <li>Any disused ventilation openings (e.g. kerosene vents) should be sealed,</li> </ul> <p>For large projects with an expected high use and ongoing frequency of artificial heating and cooling, air pressure testing is to be undertaken to the conditioned spaces of the building.</p>  |
| <b>1.3 - Glazing</b>                           | <p>For vertical glazing, the total energy used for each orientation and each story is not greater than 90% of the total allowance according to the Australian Building Codes Board glazing calculator or the calculated aggregated air-conditioning energy value as defined in part J1.5 of the NCC.</p> <p>If using the Section JV3 method using a reference building, demonstrate a 20% improvement on the Reference Building. The Reference Building is a building which achieves minimal compliance with the NCC Section J DTS provisions.</p> <p>Where there are roof lights, the SHGC and total U-Value of these roof lights exceed the requirements of NCC section J1.4 by 15%.</p>   |
| <b>1.4 - Thermal Mass</b>                      | <p>All development should apply design principles to help enhance thermal mass and temperature regulation to the building and immediate surrounds. Design principles include the following:</p> <ul style="list-style-type: none"> <li>Material selection and positioning to facilitate thermal mass</li> <li>Incorporation of architectural features that minimise or exploit heat gain</li> <li>Landscape design to maximise site perviousness and provision of vegetation that provides shade and weather protection.</li> </ul>  |
| <b>2. Lighting Design and Lighting Control</b> |  |
| <b>2.1 - Lighting</b>                          | <p>Light Emitting Diode (LED) technology exclusively for all lighting.<br/>The following minimum specifications are required for all LED lighting:</p> <ul style="list-style-type: none"> <li>Flicker free electronic drivers that feature 12-bit or greater resolution.</li> <li>To address the perception of colour, light sources must have a minimum Colour Rendering Index (CRI) of 80.</li> <li>Efficacy should be 70 lumens per watt or better.</li> <li>Warm white is preferred by default, however the architect or lighting designer may choose other colours to enhance the design's function or ambiance.</li> </ul> <p>Lighting design should consider for the following:</p> <ul style="list-style-type: none"> <li>Design for easy access to change lights.</li> <li>Factor in cost of changing light bulbs and maintenance when costing.</li> <li>Controller by the building BMS</li> <li>To include motion sensors and dimming</li> </ul> |
| <b>2.2 - Illumination</b>                      | <p>Best practice lighting levels for each task within each space type is defined as lighting with a maintained illuminance that meets the levels recommended in the relevant Standard. Guidance for different space types and activity types:</p> <p>Lighting designs are to be checked using a lighting model (such as a Dialux model or equivalent) to ensure that spaces are not over or under illuminated. As-installed illumination levels should also be checked as part of the commissioning process.</p> <p>Lighting levels for different space types and activity types should comply with AS/NZS 1680.</p>   |
| <b>2.3 - Outdoor Lighting</b>                  | <p>No external luminaire has an Upward Light Output Ratio that exceeds 5%. Lighting designs should avoid light spill over property boundaries as described in AS 4282:1997</p>   |

| Building Item   | Specification Requirement   |
|---|---|
|   | <i>Control of the obtrusive effects of outdoor lighting.</i>  |
| <b>2.4 - Control Systems</b>  | <p>Photoelectric (PE) daylight dimming, turndown modes, timers and proximity sensors are to be specified by the lighting designer, optimised to minimise running time and operational energy of lighting systems.</p> <p>Lighting control to be linked to building management systems and/or security system.</p> <p>Occupancy Passive Infrared sensors (PIR) in all areas with adhoc usage patterns (i.e. Change Rooms, toilets, meeting rooms, storerooms, medical rooms, individual offices, plant rooms, etc.)</p> <p>Sensors to be installed above entries into rooms facing the activity area of the room unless otherwise specified. Sensors not to be positioned to face doorways.</p>  |
| <b>3. Heating, Ventilation and Cooling Systems</b>                      |   |
| <b>3.1 - Heating Ventilation and Air Conditioning (HVAC) Design</b>     | <p>To reduce reliance on mechanical ventilation, the following design principles should be considered:</p> <ul style="list-style-type: none"> <li>• Use passive design principles to avoid excessive heat gain.</li> <li>• Minimise west facing glazing, maximise operable windows and cross ventilation. Use natural ventilation or a mix of natural and mechanical ventilation.</li> <li>• Install fixed external shading to north glazing, adjustable external shading to east and west windows and glazed doors.</li> <li>• Zone spaces to shut off rooms not in use, cool rooms only being used and locate non-habitable rooms on the west as a buffer from heat gain.</li> <li>• Ceiling heights to be a minimum of 2.7 metres so that ceiling fans can be installed safely.</li> <li>• In small buildings, plan to have effective natural ventilation based on BESS guidelines.</li> <li>• Use reed switches on outside doors to temporarily shut down HVAC in spaces where outside doors are regularly left open, including childcare centres, gymnasiums and pools.</li> <li>• Intelligent use of best practice site greening principles for both shading and carbon capture.</li> </ul>   |
| <b>3.2 - Heating Ventilation and Air Conditioning (HVAC) Technology</b> | <p>In new builds, heat pump technology for heating and/or cooling must be used in place of natural gas. Equipment to have Coefficient of Performance (CoP) and Energy Efficiency Ratios (EER) within 15% of the most efficient equivalent capacity unit available (i.e. If most efficient equivalent capacity unit has a COP of 3.5, then an acceptable equivalent capacity unit would be no lower than COP 3 – calculated as 3.5 x .85) Refer to <a href="http://www.energyrating.gov.au">www.energyrating.gov.au</a>.</p> <p>Preference waterless heat-rejection cooling systems – but use evaporative systems to support air flow in kitchen canopies</p> <p>Council now prohibits natural gas boilers in new buildings due to the associated emissions profile and inability to achieve Council's zero carbon emissions goals.</p> <p>For offices and childcare centres, heat recovery ventilation is encouraged. This includes specifying the inclusion of air-to-air heat exchangers as part of the building HVAC.</p> <p>Where continuous 100% fresh air is required (i.e. Gymnasiums), Heat Ventilation and Air Conditioning systems will employ closed-loop heat exchange technology with conversion efficiency greater than 75%.</p> <p>Where there is no ventilation systems and natural ventilation is relied on, include ceiling fans or air turbines to all habitable spaces. Allow for a minimum 2700mm ceiling height</p> |

| Building Item                            | Specification Requirement   |
|--|---|
|  | <p>for rooms with ceiling fans.</p> <p>Consultants to provide HVAC selection matrix to justify strategy in relation to project specific requirements.</p> <p>In mixed-use buildings incorporating an office component ratable under NABERS, any non-office space must be serviced by an entirely separate HVAC system (including plant equipment, fans, pumps etc.). This is to avoid the inclusion of any unnecessary thermal energy which will have a negative impact on the rating result. If this is not feasible, NABERS-compliant thermal metering must be installed to enable the manual exclusion of the thermal energy associated with provision of servicing to the non-office space.</p>   |
| <p><b>3.3 - Economy features</b></p>     | <p>Motorised and fully modulating economy dampers to be fitted to all integrated Heat Ventilation and Air Conditioning (HVAC) systems (packaged or split ducted) with 100% outside air capability.</p> <p>All air handling unit (AHU) fans to include Variable Speed Drive (VSD) technology capable of being controlled by non-original equipment manufacturing (OEM) external direct digital controllers (DDC). Fan or pump motors to be direct drive. Belts and pulleys are not to be used, unless absolutely required.</p>   |
| <p><b>3.4 - HVAC Control Systems</b></p> | <p>All changes to HVAC systems to include control strategies that demonstrate and follow the load of the building in conjunction with ambient conditions. To be included but not limited to;</p> <ul style="list-style-type: none"> <li>• pump speeds,</li> <li>• CO<sub>2</sub> sensor limits and thresholds,</li> <li>• Staging according to conditions.</li> </ul> <p>All systems to utilise variable supply based on occupancy using CO<sub>2</sub> monitoring and/or occupancy detection for zone ventilation control. This includes PIR for splits, fan coils, AHUs or VAVs.</p> <p>Unitary controls – where systems employ unitary controls only, supplementary control shall be available for high level interface (HLI) to BMS or other systems as required.</p> <p>Building Management Systems (BMS) – Any BMS shall be capable of HLI to existing BMS used by council for supervisory control and data acquisition. BMS equipment and software must be open-architecture and non-proprietary, based on IOT sensor technology and information transmission platforms that automatically encrypt data sent.</p> <p>HVAC systems that provide multi-mode control, regulating each area to specific temperature and master control held remotely are encouraged.</p> |
| <p><b>Refrigerants</b></p>               | <p>The current refrigerants family of R410a is to be discontinued in 2 to 3 years' time, allowing only for top ups. The new R32 therefore should be considered as a replacement when available. Note, R32 is slightly combustible. Preference is therefore given to natural refrigerants that also provide comparatively higher efficiency, such as CO<sub>2</sub> (R744), Ammonia (R717), Propane (R290).</p>  |
| <p><b>4. Hot Water Systems</b></p>       |   |
| <p><b>4.1 - Hot Water Technology</b></p> | <p>Preference hot water system as follows:</p> <ol style="list-style-type: none"> <li>1. Electric heat pump (minimum COP 3.5 under design conditions, depending on size)</li> <li>2. Electric heating element, coupled with 100% powered by renewable energy or on-site solar photovoltaic device</li> <li>3. Where gas hot water systems are absolutely required, units must be of condensing technology with high efficiency.</li> </ol> <p>Option 3 may only be used through preparation of a justification report which must be approved by both the responsible Project Manager and a representative of the Design and Sustainability team.</p>  |

| Building Item  | Specification Requirement  |
|--|--|
| <b>4.2 - Pipe insulation</b>                                 | <p>All hot water piping (flow and return) above 25mm Outside Diameter (OD) shall be insulated with pre-formed sectional glass wool or polyester insulation, having a maximum thermal conductivity of 0.036 W/m<sup>2</sup>.K at 20°C mean temperature. All exposed pipe work insulation shall be sheathed with 0.5mm thick zinc anneal sheet metal or approved equivalent. All sheathing shall be installed in a manner which resists entry of water and UV light.</p> <p>All hot water pipes (flow and return) 20mm Outside Diameter (OD) or less shall be fully insulated with Armaflex FR 13mm or approved equivalent. All exposed pipe work insulation shall be sheathed in a UV protective coating, i.e. foil tape or equivalent coating. All sheathing shall be installed in a manner which resists entry of water and UV light.</p> <p>High quality, appropriate for the application, pipes (such as George Fisher GF) must be used for the delivery of water in plant rooms. Copper lines are acceptable for smaller volume applications.</p> <p>All external hot water pipe fittings such as connectors, joiners, bend pieces and valves shall also be insulated.</p> <p>Ring main hot water systems shall be fully insulated with Armaflex FR 38mm or approved equivalent.</p> <p>Note: Pre-lagged (Kemlag or Polylag) pipe not to be used.</p> <p>Long ring main runs are not recommended as energy is wasted due to idle standing in the line.</p> |
| <b>4.3 - Hot Water Control Systems</b>                       | <p>Ring main hot water systems will include a digital time clock control mechanism that:</p> <ul style="list-style-type: none"> <li>• Prevents hot water circulation during non-occupancy hours.</li> <li>• Starts ring main to circulate water at least one hour prior to estimate use. Preference connection to a Building Management System (BMS) or building security system.</li> </ul>   |
| <b>5. Building Services Operational Control</b>              |  |
| <b>5.1 - Metering and Monitoring</b>                         | <p>Accessible metering must be provided to monitor building energy and water consumption, including all energy and water common uses and major uses, and sources.</p> <p>Non-utility meters (including sub-meters) must follow the same requirements to those described in the most current Validating Non-Utility Meters for NABERS ratings protocol, issued by the NSW Office of Environment and Heritage.</p> <p>Meters must be located in an area that allows regular monitoring and maintenance by facilities managers or connected to the BMS to be read remotely, as digital meters. A monitoring plan must be developed so Council and building managers can find, access and easily interpret metering data.</p>  |
| <b>BMS Systems and Remote (IoT) Based monitoring systems</b> | <p>A building's BMS system is the eyes and ears of all equipment and devices under its control. The BMS system needs to be based on IOT sensor technology that provides high accuracy, repeatability and long battery life. It needs to be of open architecture and non-proprietary. Its software must be capable of remote transmission securely via a platform such as LoRaWan, not WiFi. Analytics of the data generated by the BMS need to be read and understood by qualified engineers who would be able to identify abnormalities in their pattern of use.</p>  |
| <b>5.2 - Commissioning Hand Over and Tuning</b>              | <p>A <i>building user's guide</i> must be completed by the design team (using Green Star templates). The building user's guide is to be reviewed and updated by the design team just prior to building occupation.</p>   |

| Building Item  | Specification Requirement   |
|--|---|
|  | <p>An independent commissioning agent is to be appointed to ensure that all building systems are working to peak efficiency and as per design specifications before practical completion can be granted.</p> <p>The commissioning agent must be appointed directly by Council (not by the main building contractor) in a timely manner. The commissioning agent can be a member of Council's facilities team, in which case will need to report back to the project team to report highlights, issues found, or lessons learnt.</p> <p>The commissioning agent's scope is to also oversee building tuning of the main building systems and building controls over 12 months of operations (during the defects liability period).</p> <p>The design team and the commissioning agent is to train Council staff, Facilities Managers and the main building users in the efficient operation of building systems, maintenance requirements, signs of inefficient operation and the contents of the building users guide as part of building handover.</p>  |
| <p><b>5.3 - Lighting Control</b></p>                             | <p>Lighting control systems outlined in item 2.4 are to be commissioned and then tuned over a period of 12 months to ensure that lighting works both efficiently and in line with the building user's needs. Smart lighting is encouraged.</p>  |
| <p><b>5.4 - HVAC Control</b></p>                                 | <p>HVAC Control systems outlined in item 4.3 are to be commissioned and then tuned over a period of 12 months to ensure that HVAC works both efficiently and in line with the building user's needs.</p> <p>Split systems other than split ducted (hi wall, cassette, under ceiling) will include Original Equipment Manufacturing (OEM) wired wall mounted controllers with administrator lock out capabilities of hi and low temperature, fan speed, run time. Infrared remote controllers (IRCs) should be avoided.</p>  |
| <p><b>6. Renewable Energy Provision</b></p>                      |   |
| <p><b>6.1 - Renewable Energy Systems</b></p>                     | <p>Installation of a micro-generation renewable energy system to supply an agreed level of building energy consumption is required.</p> <p>If solar PV system is deemed not immediately feasible (as approved by both the relevant Project Manager and a representative of the Design and Sustainability team), the building must be designed to accommodate the installation of solar PV, batteries and battery management system that maximises solar irradiance at a future stage.</p>   |
| <p><b>7. Energy Efficient Appliances and Equipment</b></p>       |   |
| <p><b>7.1 - Appliance and Equipment Efficiency standards</b></p> | <p><b>Hand Dryers:</b><br/>Only high energy efficient hand dryers utilising no heat, high air speed technologies along with air filters to promote hygiene are to be installed in toilets, bathrooms and change rooms. Paper towels and paper towel dispensers are not to be used unless hand dryers are considered to be unsuitable (with supporting evidence).</p> <p><b>Fans and Exhaust Units:</b><br/>Highest available energy efficient ventilation systems, extraction fans, etc.</p> <p><b>Domestic Fit-out Appliances:</b><br/>Equipment used in fit out to be within one star rating of best available technology for energy and water efficiency. i.e. fridge / freezer / dishwasher (5 star water rating and 4 star energy rating minimum) / oven / cook top / range hood/ hot water urns.</p> <p>Energy efficiency of appliances can be confirmed on the website <a href="http://www.appliancesonline.com.au">www.appliancesonline.com.au</a> with performance ratings based on information provided on the website <a href="http://www.energyrating.gov.au">www.energyrating.gov.au</a></p> <p><b>Beverage Boilers:</b></p> |

| Building Item  | Specification Requirement  |
|--|--|
|  | Install timers on tea and coffee boilers so they switch off over weekends and overnight. No urns to be used.   |
| <b>7.2 - Peak Demand Management</b>                  | For large buildings with a high anticipated electrical consumption, electrical equipment and control systems should be designed to minimise kVA demand during peak times. This includes the use of battery storage, coupled with renewable energy generation and demand management systems.  |
| <b>8. Water Efficiency and Stormwater Management</b> |  |
| <b>8.1 - Water Fixtures, Fittings and Appliances</b> | <p><b>Shower heads:</b> 3 star WELS, ≤7.5L/min flow rate</p> <p>Use timed shower systems that allow for pre-set temperature control and flow duration.</p> <p><b>Shower taps:</b> push button time delay variable temperature mixing valve (e.g. Enware TFC790925 or equivalent).</p> <p><b>Toilets:</b> Within 1 star WELS of best available</p> <p><b>Urinals:</b> Within 1 star WELS of best available, preference sensor operated</p> <p><b>Taps:</b> Within 1 star WELS of best available, preference push button</p> <p><b>Washing machines / dishwashers / other appliances:</b> Within 1 star WELS of best available</p> <p>Refer to WELS Product Database: <a href="http://www.waterrating.gov.au/">http://www.waterrating.gov.au/</a></p> <p>Products with a specific “fit for purpose” use must meet the abovementioned water consumption benchmarks.</p> |
| <b>8.2 - Rainwater Tanks</b>                         | <p>Rainwater harvesting system to supply toilets, urinals, laundry, garden irrigation, etc. Match roof capture area and tank size to expected use.</p> <p>Tanks to have adequate filtration when connected to internal uses. Gutter guards, first flush diverters, etc. need to be considered. Tools such as <a href="http://www.tankulator.ata.org.au/">www.tankulator.ata.org.au/</a> or <a href="http://www.insitewater.com.au">www.insitewater.com.au</a> can help size tanks appropriately.</p> <p>Tank purging/sharing systems should also be considered based on the project and site surround to maximise non-potable water use and plan for storm events.</p>   |
| <b>8.3 - Stormwater Quality</b>                      | <p>Design the stormwater management system to achieve Best Practice stormwater management. Rainwater harvesting system (see rainwater tanks above) and/or raingardens, swales or other engineered treatment measures may be required.</p> <p>Best Practice stormwater management can be demonstrated by either achieving a 100% score in Melbourne Water STORM tool, InsiteWater or MUSIC modelling.</p>   |
| <b>9. Building Materials and Finishes</b>            |  |
| <b>9.1 - Timber</b>                                  | <p>All timber used to be FSC or PEFC certified or re-used/recycled. The use of tropical hardwoods such as Merbau, Mirabow, Ipil, Kwila, Vesi are not permitted under any circumstances.</p> <p>All engineered wood products, including office furniture and fit outs to comply with E0 standard for formaldehyde levels. Where no E0 Product is readily available criteria within the Green Star Formaldehyde Minimisation credit can be applied. (Refer to IEQ13.2 in the Greet Star Technical Manual).</p> <p>The use of laminated timber structural members (plantation) will be given precedence over native hardwood structural members.</p>  |
| <b>9.2 - Structural and Reinforcing Steel</b>        | <p>95% of the building’s steel (by mass) is sourced from a Responsible Steel Maker.</p> <p>For steel framed buildings, at least 60% of the fabricated structural steelwork is supplied by a steel fabricator/steel contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute (ASI).</p> <p>For concrete framed buildings, at least 60% (by mass) of all reinforcing bar and mesh is produced using energy-reducing processes in its manufacture (measured by average</p>   |

| Building Item   | Specification Requirement  |
|---|--|
|   | mass by steel maker annually).   |
| <b>9.3 - Building Products in General</b>               | <p>Meet transparency and sustainability requirements under one of the following initiatives:</p> <ul style="list-style-type: none"> <li>• Reused Products</li> <li>• Recycled Content Products</li> <li>• Environmental Product Declarations</li> <li>• Third-Party Certification</li> <li>• Stewardship Programs.</li> </ul>  |
| <b>9.4 - Poly Vinyl Chloride (PVC)</b>                  | <p>To reduce environmental impacts for building users, internal fit out plastics (e.g. vinyl flooring and carpet underlays) should exclude PVC. Where PVC is used apply Best Practice Guidelines for PVC in the Built Environment by specifying eco-labels (e.g. Global-Mark Certified) that comply with the Green Star Responsible Materials credit. A Material Safety Data Sheet is a way to verify that a product does not contain PVC.</p>               |
| <b>9.5 - External surface finishes</b>                  | <p>Light materials with Solar Reflectance Index (SRI) in accordance with the Green Star criteria for the heat island effect are to be used for roof and external facade to reduce urban heat island effect and reduce cooling load.</p> <p>(Roofing material preference: Colorbond Coolmax or approved equivalent)</p>   |
| <b>10. Indoor Environmental Quality</b>                 |  |
| <b>10.1 - Paints, Adhesives, Sealants &amp; Carpets</b> | <p>Low or zero Volatile Organic Compound (VOC) office furnishings, flooring and internal coatings (i.e. paints, adhesives and sealants) in accordance with the Green Star Tool. (Refer to IEQ 13.1 in the Green Star Technical Manual).</p> <p>Plasterboard with recycled content.</p>   |
| <b>10.2 - Daylight Access</b>                           | <p>Provide adequate daylight for all spaces and demonstrate a Daylight Factor (DF) of at least 2.0% at finished floor level (FFL) under either a CIE overcast sky or a CIE uniform sky through modelling or through Green Star Daylight and Views Hand Calculation Guide.</p>  |
| <b>11. Transport Facilities</b>                         |  |
| <b>11.1 - Low Emission Vehicle Provision</b>            | <p>Design allowance for at least 2 single phase sub-circuits (40 Amp capacity) on switch board to allow for e - vehicle recharging.</p> <p>15% of parking should be designated for fuel-efficient vehicles. Parking spaces for fuel-efficient, hybrid and electric vehicles must be clearly designated, for example through use of different coloured line markings and highly visible signage</p>   |
| <b>11.2 - Bike-Parking</b>                              | <p>Bicycle parking for users and visitors to be meet at the minimum Planning Scheme Clause 52.34 requirements.</p> <p>Bicycle parking and end of trip facilities must be designed to meet the minimum requirements using the Built Environment Sustainability Scorecard (BESS).</p> <p>End of trip facilities designed in accordance with Bicycle Victoria's Bicycle Parking Handbook.</p> <p>Continuous and accessible travel to the bike parking area.</p> |
| <b>12. Innovation</b>                                   |  |
| <b>12.1 - Innovation Opportunities</b>                  | <p>Council encourages innovation in Council Buildings, as they help Council to demonstrate leadership and help educate the community on practical sustainability.</p> <p>Council buildings should continuously trial and refine new technologies as they become available.</p> <p>Technologies currently considered innovative but which should be considered for Council buildings include:</p>   |

# Greater Dandenong Policy

| Building Item | Specification Requirement   |
|---------------|---|
|               | <ul style="list-style-type: none"> <li>• Increased thermal mass in preference to light weight structures.</li> <li>• Simulated thermal mass using light weight phase change materials.</li> <li>• For existing buildings - investigate retrofitting phase change materials and adding additional shading, blinds and window tinting.</li> <li>• Batteries used to reduce peak load and network demand charges, and designed to provide load shifting, peak lopping, and off-peak charging.</li> <li>• Batteries designed to improve on-site utilisation of renewable generation.</li> <li>• Batteries used to increase building operational resilience in the face of civic emergencies and grid failures (using renewable and battery combinations instead of back-up generators).</li> <li>• Increased provisions for electric vehicles.</li> <li>• Solar shading for car parks to support electric vehicle charging.</li> <li>• Low carbon cements cement alternatives.</li> <li>• For larger projects – a Power Purchase agreement to supply renewable energy to achieve zero carbon goals when these cannot be completely achieved by on-site measures (undertaken as per Green Star requirements). Any other innovations not otherwise considered by this document but recommended by the Project Manager or design team.</li> <li>• All projects are to undertake a pre-occupancy and post-occupancy survey to understand building occupant comfort and needs.</li> <li>• All new development must appropriately reflect and acknowledge and/or incorporate Aboriginal and Torres Strait culture. This is to be guided through the delivery of Councils Reconciliation Action Plan.</li> </ul> |