CITY OF CHARLES STURT
ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT (ESD) REQUIREMENTS – COUNCIL BUILDINGS

City of Charles Sturt

MEANS THE WORLD

Contents

*This document was endorsed by City of Charles Sturt on 14 June 2022

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Introduction

Vision and principles

The City of Charles Sturt is committed to reducing the impact of our operations on the environment, including an ambitious goal to achieve Net Zero corporate emissions by 2025.

Our buildings and open spaces play a large part in the services we offer to the community. To achieve our environmental sustainability goals, we must deliver buildings that showcase best practice in sustainable design, construction and ongoing operations.

Our vision is that our building assets:

- *use less energy, potable water and produce less carbon emissions over their life,*
- *are powered by renewables,*
- *are built and furnished with recycled content materials,*
- *improve resilience to the local impacts of climate change, and*
- *create comfortable/healthy places for people that showcase connection between the built and natural environments.*

The key principles that must be followed in the development and maintenance of all council buildings are:

Passive design	Building form and design must respond to the local micro climate. Optimise passive design principles to minimise operational energy and water needs, carbon emissions and peak energy demand.
Energy efficiency and low carbon emissions	Energy efficient, all-electric buildings, powered by renewable energy. No new gas connections.
Climate resilient design	Plan for resilience of buildings and their surrounds, through reducing heat island effects and considering climate change impacts on each building (rainfall, heatwaves, flooding, drought)
Water conservation	Water efficient fixtures, connecting to recycled stormwater or alternative water supplies where possible.
Health and wellbeing	Consider health and wellbeing of occupants through provision of high quality indoor environments to support wellbeing.
Sustainable materials	Choose local, durable, recycled content, recyclable, low toxicity and low embodied energy construction and fit out materials.

Context

The City of Charles Sturt owns, operates and leases multiple facilities that are used by council staff and the community. These facilities vary in size and function, including the Civic Centre (Woodville), Beverley Centre, St Clair Recreation Centre, public libraries, community centres and sports facilities.

Buildings and infrastructure typically have a long life (at least 50 years) and require a significant amount of resources to construct and operate. Early decisions such as material selection, siting and the asset's connection to the surrounding natural environment can reduce or increase the ecological footprint for the life of the project.

The Community Plan 2020-2027 sets the vision for our community and organisation to be a 'Leading, Liveable City' and defines the key environmental outcomes to be achieved:

- *Greenhouse gas emissions significantly reduce, and we adapt to our changing climate*
- *Our city is greener to reduce heat island effects and enhance our biodiversity*
- *Charles Sturt is recognised as a leading partner and educator in pursuing a sustainable future with our community*
- *Reduced waste production across our city, combined with the growth of our circular economy*

We have a number of strategies to help achieve these key environmental objectives such as a regional climate change adaptation plan (AdaptWest), Biodiversity Action Plan, tree canopy improvement goals and a strong commitment to growing the circular economy through procurement and recycling. The development of these standards seeks to bring these opportunities together for delivery within council buildings.

In December 2019, we unanimously declared a Climate Emergency. In response, we developed and endorsed *Net Zero: Our map to Net Zero corporate emissions 2020-2025.* This ambitious plan commits us to:

- 50% (corporate) emissions reduction based on 2017/18 levels by 2025
- Net Zero corporate emissions by 2023/24
    - Net Zero Sub-sector Targets: Buildings, Lighting + Open Space:
        - Net Zero carbon buildings for new buildings by 2025
        - Continuously improve energy efficiency and solar PV uptake for existing buildings based on 2017/18 levels
    - Net Zero Sub-sector Target: Not Waste
        - Increase purchase of recycled goods each year until we are buying back recycled material equivalent to 50% by weight of the contents of kerbside recycling bins by 2025 and 100% by 2030

Purpose

These Environmentally Sustainable Development (ESD) Requirements have been developed to ensure all assets in our portfolio reflect this corporate commitment to environmental sustainability and the target of net zero carbon operation of new buildings by 2025. The requirements help:

- Define the City of Charles Sturt's ESD requirements to be achieved in the planning, design, construction, operation and management of Council buildings, ensuring consistency across all our projects and assets.
- Enable us to achieve and exceed the aspirational goals in the Community Plan 2020-2027, and the targets defined within our key strategies such as Net Zero, AdaptWest and the Biodiversity Action Plan.
- Realise the benefits of incorporating ESD into our building and infrastructure assets including carbon emissions reductions, cost savings, improved occupant comfort and wellbeing, and benefits to the local economy, such as use of local materials and contribution to the circular economy.
- To provide better spaces within our buildings for staff to work and the community to visit.
- To provide leadership, and assist with greater uptake of ESD principles, in the wider community.

These ESD Requirements take precedent over all other City of Charles Sturt documents in relation to the standards and performance requirements associated with new building design and major refurbishments. They shall be considered minimum standards.

ESD Requirements Framework

Application

When tendering new building and refurbishment projects, the City of Charles Sturt's Project Brief will specify that the ESD Requirements must be used, and that compliance must be demonstrated using the appropriate *ESD Requirements checklist.*

*All ESD requirements are considered to be minimum requirements, unless not applicable for the project. The reason for **not** including any of the requirements must be provided on the checklist for review by the project team.*

Each project manager must address the requirements at all project design stages. Project teams must provide commentary to explain that the project will comply, or the reason the project will be seeking consent to apply an alternative solution. The checklist should be completed at all stages, as follows:

Before commencement	• Incorporate ESD Requirements into project briefing material
Concept Design	• Review ESD Requirements • Prepare ESD Requirements checklist to identify ESD goals • Submit to CoCS for review
Detailed Design	• Update ESD Requirements checklist to document project ESD strategy • Submit to CoCS for review
Construction	• Update ESD Requirements checklist to document ESD at project completion • Submit to CoCS for review
Operations	• Review ESD Requirements • Optimise and monitor building performance • Consider ESD Requirements in procurement
Maintenance	• Review ESD Requirements • Prepare O&M ESD Requirements checklist • Submit to CoCS for internal review

The *ESD Requirements checklists* can be found in Appendix B.

Sustainable Development Requirements

The following sections list the minimum performance ESD Requirements for all new buildings, refurbishments, public realm structures, operations and maintenance of our buildings. Variations to these guidelines may be considered if divergence is deemed to deliver equivalent or better levels of sustainable performance.

Refer to the ESD Specification in Appendix A for more detailed information where required.

ESD Systems

Projects should seek independent sustainability advice to meet the requirements of these ESD Requirements for projects (generally over $500k, or as specified by us). As part of this independent sustainability advice, an ESD report addressing these guidelines and the ESD Checklist should be prepared.

The builder is required to implement an environmental management risk assessment for the project, and all projects over $1M are required to have a Construction Environmental Management Plan to manage all works.

Passive Design

Create comfortable and healthy indoor environments by maximising natural light, outdoor and indoor planting, passive design and cooling techniques such as night purging, adequate ventilation and fresh air intake.

Consider sustainable performance at site selection and massing stage, and orientate buildings to the north where possible to gain most benefit from the winter sun and protection from the western summer sun.

All occupied buildings shall be thermally insulated to a performance standard at least 10% higher than the National Construction Code (2019) requirement. Meet the following insulation levels as a minimum for occupied spaces:

Construction	Insulation
External walls	R3.5
Internal walls	R2
Roof	R4
Ceilings	R2

Northern elevations should have eaves or sun control shades fitted, east and west elevations should have limited windows or sun control shades.

All occupiable spaces shall have access to daylight and views. Daylight modelling shall be undertaken for facilities where daylight is critical, such as administration buildings, childcare centres, etc. Natural light is to be optimised wherever possible.

All office spaces shall provide a glare free environment through the use of external shading devices such that no direct sunlight is present in the working plane for 80% of working hours. Where this is impractical for all seasons (for example, on north elevation during the winter months) preference shall be given to the use of external green shading or tree plantings to provide solar control, with internal manually operated blinds provided as a secondary control measure.

Maximise views to the outside for connection with nature and daylight. A minimum of 60% of the occupiable spaces shall have a view to the outside.

Buildings are encouraged to provide different types of spaces to allow physical connection to nature.

Provision of high levels of fresh air through openable windows and mechanical systems should receive high priority.

Minimise entry of outdoor pollutants by locating the ventilation system away from potential outdoor contaminants (petrol fumes, etc) and designing them to minimise the entry of pollutants.

Avoid introducing polluted air from nearby facilities, equipment and utility areas including from food preparation areas, photocopying and high-volume printers and other production equipment.

Energy Efficiency and Low Carbon Emissions

Achieve net zero carbon buildings by 2025. This means that the buildings are able to be operated in a way that allows all operational greenhouse gas emissions/carbon emissions, to be minimised, or offset.

All buildings to utilise only electrical services and appliances. No gas to be used in any new building. Refurbishments and maintenance projects should seek to replace existing gas where feasible.

Increase the generation of on-site renewable energy to reduce reliance on fossil fuels. A solar PV and battery assessment must be undertaken on all projects, being mindful of our commitment to purchase 100% renewable energy for Council owned assets by 2023. A minimum of 20% of the building energy use should be provided by on-site renewable energy generation systems. A minimum of 70% of the available roof area should be capable of supporting solar photovoltaic electricity generation.

Employ lighting systems and arrangements that allow natural light to be used in lieu of artificial light when external ambient sources can provide sufficient lighting levels. Follow the lighting requirements in the ESD specification in Appendix A.

Appropriate metering with consideration to Internet of Things (IoT) devices, with secure and stable connectivity must be installed on all new buildings and where possible in refurbishment works, to enable energy use to be monitored and to support technologies that improve environmental sustainability outcomes during the operation of the building.

Select office equipment that is Energy Star compliant or similar, and uses little power on standby power where possible.

Provide for emerging electric vehicle ownership by considering provision of EV charging stations, and the expected power requirements.

Climate Resilient Design

Prepare for projected changes in climate for western Adelaide/City of Charles Sturt (particularly rising temperatures and increased frequency of high heat days/heatwaves, decrease in annual rainfall, more intense rainfall events, sea level rise) by increasing the resilience of buildings and infrastructure to these conditions. Ensure that a Climate Adaptation assessment is undertaken to identify local climate risks during the design stage for all projects.

Consider batteries to store solar power generated to support business continuity and power needs during brown/blackouts.

Retain existing trees and vegetation wherever possible through the design and construction phases. Council has a goal to reach 25% city-wide canopy cover and retention of existing trees through thoughtful and well-considered design, in addition to planting more trees that are “right-sized” to the location (i.e. bigger trees where bigger spaces are available) will contribute to the achievement of this target.

Prepare the site to support and maximise the establishment of vegetation by avoidance of compaction of soils during construction and undertaking pre-planting amelioration such as decompaction, increasing organic matter (humus) in the soil profile, increasing soil moisture infiltration by treating hydrophobic soils, and ensuring the most effective irrigation strategies.

Climate resilient plant species to be incorporated into landscaping design to minimise irrigation requirements longer term and increase biodiversity.

Landscape plans should include trees and vegetation to cool and/or shade the building and surrounds.

Consider if green roofs or green walls are suitable for the site.

Preference should be given to permeable surfaces to reduce stormwater runoff.

All roof coverings, shade structures and pavers shall be light in colour to minimise the heat island effect. Roof solar absorptance value limited to 0.45 in the NCC 2019.

All refrigerants must be zero ozone depleting potential (ODP) and low global warming potential (GWP).

Appropriately size gutters for anticipated rain events.

Finished floor levels consider local climate risks.

Water Conservation

Reduce potable water use through water efficient fixtures and fittings, as per the requirements of the ESD Specification in Appendix A.

Rainwater or recycled water should be supplied for toilet flushing, and all site irrigation requirements. Where available and agreed with the project team, connection should be made to recycled water networks. If not available, onsite rainwater harvesting and/or stormwater reuse should be prioritised.

Where landscape irrigation or external wash down systems are provided, they shall use 100% rainwater or recycled water.

Integrate Water Sensitive Urban Design (WSUD) and landscaping to manage stormwater and flooding, including detention basins or swales as a natural management technique.

Appropriate metering must be installed on all new buildings and where possible in refurbishment works, to enable water use to be monitored.

Health and Wellbeing

Building elements that showcase or emulate natural systems and processes should be incorporated where possible. This may include:

- Internal and external planting, including green walls, to incorporate biophilic design principles.
- Indoor/outdoor space for relaxations, working, dining, etc.
- Integration with building energy or water systems.
- Integration with surrounding landscapes.
- Building elements that emulate or represent natural elements.

Encourage the use of more sustainable transport options such as walking, cycling, car sharing and public transport, EV charging spaces, and End of Trip facilities, including covered and secure facilities for cyclists including bike racks/compounds/containers, showers and change facilities.

Enough covered bike racks shall be provided to enable all occupants to store their bikes under cover.

Sustainable Materials

Select low emission and non-toxic internal finishes and furniture, as per the ESD specification in Appendix A.

Enhance the local circular economy by prioritising the purchase of recycled-content materials and products.

Consider the embodied energy of materials, and give preference to materials with reduced embodied energy.

Choose materials according to the waste management hierarchy (ranked most preferable to least): avoid, reduce, reuse / salvage, recycle, recover, treat, dispose. Use post-consumer recycled materials over pre-consumer.

Wherever practicable, source all products, materials and trade labour as per the following hierarchy:

- First Priority: South Australian businesses.
- Second Priority: Australian businesses.
- Third Priority: Materials sourced from the Asia-Pacific Region.

Do not source products and trade labour from outside of Australia unless there are unique circumstances which dictate otherwise.

At least 90% of all construction and demolition waste is to be recycled.

All new building works and refurbishment should include adequate space and facility to allow for the easy separation, storage and collection of waste for recycling. As a minimum, space should be provided for general waste, mixed recycling (paper, card, glass, plastic) and organics (where kitchen or break-out space is included).

Refer to the ESD Specification in Appendix A for more information on selection of materials, products, furnishings and fixtures.

Appendix A ESD Specification

This ESD Specification can be used by project teams for new building and refurbishment projects, where appropriate.

VOC Levels in Paints, Sealants and Adhesives

All internally applied paint, adhesive and sealant products must not exceed the following TVOC limits:

Product Type	Maximum VOC Content (g/litre)
General Purpose adhesives*	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

**Most adhesives and sealants are addressed in the 'General purpose adhesives and sealants' category of the table above, unless they clearly belong in the other specialised product categories.*

Lead Content in Paints

Industrial surface paints and coatings shall not contain lead nor lead components.

VOC Levels in Carpets

All carpets shall comply with the Total VOC limits specified in the table below.

Test Protocol	Maximum VOC Content
ASTM D5116 – Total VOC limit	0.5 mg/m² per hour
ASTM D5116 – 4 – PC (4-Phenylcyclohexene)	0.05 mg/m² per hour
ISO 16000 / EN 13419 – TVOC at three days	0.5 mg/m² per hour
ISO 10580 / ISO / TC 219 (Document N238) – TVOC at 24 hours	0.5 mg/m² per hour

Composite Wood Products

All engineered wood products shall have formaldehyde emissions that meet the E0 levels shown in the table below.

Provide certification of the quantities of all engineered wood products delivered to site, and manufacturer/supplier certification to demonstrate compliance with the specified emissions limits.

Emission class	Formaldehyde emissions limit (mg/L)	Formaldehyde emissions limit (ppm)
E0	Less than or equal to 0.5	Less than or equal to 0.041

Timber

At least 95% (by cost) of all timber used in the building and construction works shall be certified by a forest certification scheme that meets the GBCA's 'Essential' criteria for forest certification, such as Australian Forest Standard (AFS) or Forest Stewardship Council (FSC); or is from a reused source; or is sourced from a combination of both.

Any certified timber used in the project shall be supplied in accordance with the Chain of Custody (CoC) rules of the respective forest certification scheme (e.g. relevant CoC certificates or invoices including a relevant CoC code or serial number).

Steel

At minimum of 95% of all steel used must be from a Responsible Steel Maker with ISO 14001 Accreditation.

For reinforcing steel, at least 60% of all reinforcing bar and mesh shall be produced using energy-reducing processes in its manufacture (measured by average mass by steel maker annually). Reinforcing steel includes reinforcing bar and mesh used in concrete reinforcement in the building structure. This includes steel in situ, stressed, and pre-cast concrete applications.

Concrete

At least 30% of the concrete in the Portland cement used in the project will be reduced by replacing concrete with substitute materials such as fly ash, recycled aggregate, hemp (hempcrete), or wood chips (durisol).

The reduction will be measured by mass across all concrete used in the project compared to the reference case.

PVC

At least 90% of all common uses of PVC in the project shall be either PVC products sourced from manufacturers which meet the Best Practice Guidelines for PVC in the Built Environment; OR are products that do not contain PVC.

Common uses of PVC products for this project include cables, pipes, flooring, and blinds.

Best Practice PVC products and suppliers can be found via the BEP PVC Product Registry: http://www.vinyl.org.au/bep-pvc-product-registry

Insulation

All insulation used shall have an Ozone Depleting Potential (ODP) of zero in both its manufacture and composition. Insulation covers building services (i.e. refrigerant pipe work, ductwork, hot & cold water pipes, water tanks, etc.) and building fabric including; walls, roofs, floor, window frames, doors, cavity closures and lintels.

Product Certification

All products and materials used in construction shall be selected in accordance with the following requirements.

Third Party Certification

Preference shall be given to the selection of construction materials which have a third-party green certification.

The following products as a minimum shall be selected to have a third-party green certification:

- Internal blinds
- Flooring
- Carpets

These products shall be certified in accordance with one of the certification schemes assessed against the GBCA Framework for Product Certification:

- Carpet Institute of Australia Limited, Environmental Certification Scheme (ECS) v1.2
- Ecospecifier GreenTag GreenRate v3.2
- Australasian Furnishing Research and Development Institute, Sustainability Standard for Commercial Furniture - AFRDI Standard 150
- Good Environmental Choice Australia (GECA), including six standards

Environmental Product Declarations (EPD)

Preference shall be given to the selection of construction materials which have an Environmental Product Declaration (EPD) certified in accordance with ISO 14025.

The following products as a minimum shall be selected to have a certified EPD:

- Internally applied paints
- Plasterboard

The manufacturer of the products shall have an EPD for the product/material certified in accordance with ISO 14025 and published on the EPD website.

Product Stewardship

Preference shall be given to the selection of construction materials where the manufacturer of the products provides a contractual agreement to take back the product at the end of its service life for reuse, recycling or reprocessing.

Local Content

Preference shall be given to the selection of construction materials sourced, manufactured or assembled in South Australia, in accordance with the SA Industry Participation Policy (IPP).

Recycled Content

Preference shall be given to the selection of construction materials which are recycled or have a recycled content. Post-consumer recycled content is preferred. These may include:

- Steel products
- Timber products
- Carpets
- Insulation
- Concrete and aggregates

Furniture

Purchasing of internal furniture must be through selection of low emission internal finishes and furniture. Where furniture is replaced it shall have an approved Eco-Rating which may include:

- Good Environmental Choice Australia (GECA)
- Carpet Institute of Australia Limited, Environmental Certification Scheme (ECS) v1.2
- Ecospecifier GreenTag GreenRate v3.1
- Australasian Furnishing Research and Development Institute, Sustainability Standard for Commercial Furniture - AFRDI Standard 150
- The Institute for Market Transformation to Sustainability (MTS) Sustainable Materials Rating Technology standard version 4.0 - SMaRT 4.0

Alternatively, and where an approved Eco-Rating is not in place, the supplier must be able to document compliance with the following:

- Eco Preferred Content >20% by mass
- Durability >15 Years
- Product Stewardship Commitment
- ISO 14001:2004 certified manufacturing process covering waste minimisation, energy, emissions and waste minimisation.
- Modular in Design
- Designed for disassembly

Commissioning

The Contractor and appropriate sub-contractors must pre-commission, commission and monitor quality for all building services in accordance with the requirements of the following:

a) ASHRAE Guideline 1-1996 for Mechanical services, and
b) CIBSE Commissioning Codes – A: Air Distribution Systems; B: Boilers; C: Automatic Controls; L: Lighting, M: Commissioning Management; R: Refrigerant Systems; W: Water Distribution Systems for other services; or both AIRAH DA27 and DA28.

Commissioning is an integral part of the project delivery process.

Lighting

All lights are flicker free.

All lighting systems shall be provided with daylight control and the ability to independently switch lighting in zones no larger than 100sqm in area.

Preference shall be given to the use of LED light sources. Under no circumstances will the use of tungsten filament or halogen light sources be permitted.

The lighting design must accurately address the perception of colour in the space. The project team shall support their justification by ensuring their selection complies with the guidance provided in *Table 7.2 in AS 1680.1:2006.*

Lighting levels must be appropriate to the tasks performed in the space. For office spaces, this should be in accordance with *Table 3.1 of AS1680.2*. For other workspaces not covered by office spaces, this should be in accordance with *Table 3.1 of AS1680.1.*

All lighting systems shall be provided with daylight and/or occupancy sensors.

HVAC

All HVAC system compressors shall have a minimum Coefficient of Performance (COP) of 3.7 and a minimum Energy Efficiency Ratio (EER) of 3.24.

All split air conditioning units shall have the highest available energy star rating at the time of purchase.

All refrigerants used in the project are to have an Ozone Depletion Potential (ODP) of zero.

All ducted air conditioning systems shall include an automatically controlled economy cycle allowing additional outside air to be used for free cooling when ambient conditions allow.

All existing ductwork proposed for re-use shall be inspected and thoroughly cleaned of all dust and debris prior to re-commissioning.

Consideration must be given to the use of widened temperature set points, and alternative temperature set points in summer and winter seasons in order to reduce the size of HVAC plant required, and to reduce associated ongoing energy consumption.

Metering and Monitoring

Appropriate metering must be installed on all new buildings and where possible in refurbishment works, to enable energy and water use to be monitored.

In a building with a large floor plate, separate energy meters for lighting consumption, and other power consumption can be considered. Lighting and other sources of large power consumption should be able to be managed and monitored through a building management system.

Any items with an energy use greater than 20kVA, separate metering should be considered.

Considered metering options should be discussed and agreed with Council's project team.

Printers and copiers

Select printers that allow the following functions:

- Double sided printing and scanning.
- Long life printing drums and toner cartridges.
- Ability to use refilled toner or ink cartridges.
- Toner or ink-saving modes, such as draft, black and white only.
- Manual energy saving button and programmable power management features

- Consider if a multifunction device (MDF) is more cost effective and have lower environmental impact than individual pieces of equipment.
- Chose equipment with an emissions certificate to ECMA-328 to reduce toxic emissions.

Select efficient computers:

- Prioritise laptops over desktop computers where practical.
- Choose LED monitors.
- Choose those with the ability to be automatically powered down when not in use for a long time period or add power sensing and shut-off devices where possible.
- Incorporate video conferencing facilities into all new office projects to reduce the need for travel.

Equipment

All energy consuming appliances and equipment (e.g. fridges, TV's, and computers) shall be selected to have the highest available rating under the Australian Government's "Energy Rating" labelling system at the time of purchase.

All water consuming appliances (dishwashers, etc) shall be selected to have the highest available rating under the Australian Government's Water Efficient Labelling Scheme (WELS) at the time of purchase.

Water Fixtures

All fixtures and fittings installed to have the following minimum water efficiencies, as measured using AS/NZS6400:2005 Water-efficient products-Rating and labelling:

Type	WELS Star Rating
Toilet	**6 star**
Bathroom Taps	**4 star**
Cleaners Taps	**6 star**
Showerheads	**3 star**

Appendix B ESD Requirements Checklist – Design and Construction

*All ESD requirements are considered to be minimum requirements, unless not applicable for the project. The reason for **not** including any of the requirements must be provided on the checklist for review by the project team.*

If independent ESD advice is being provided (all projects above $500K) then a Sustainability Report addressing the requirements of this checklist must be submitted by the project team.

*This document was endorsed by City of Charles Sturt on 14 June 2022

Project Details	
Title:	
Description of proposed works:	
Building location:	
Gross floor area (m^2):	
Contact details *(to be completed by person compiling checklist)*	
Name:	
Role:	
Contact details:	

Item	**Yes**	**No**	**Describe:** **Where 'No' has been selected, please provide detail explaining why this requirement hasn't been met**
ESD Systems			
Has the project received independent ESD advice? Projects valued over $500k require this.			
The builder has an approved Construction Environmental Management Plan for the project. Projects valued over $1M require this.			
Passive Design			
The building and site orientation have been optimised			
The design considers the likely use of the building by occupants, to support ESD outcomes over asset life			
Opportunities to maximise or retrofit insulation have been achieved within walls, roof and ceiling			
Glazing has been upgraded to assist in improving the buildings thermal performance			
Opportunities to increase the daylight and provide views to the outside have been achieved/maximised			
Opportunities to incorporate natural ventilation, such as using operable windows or louvres have been incorporated into the design			

Item	Yes	No	Describe: Where 'No' has been selected, please provide detail explaining why this requirement hasn't been met
If the building is mechanically conditioned, maximise fresh air levels			
Glare reduction measures are implemented			
The building incorporates external sun shading			
Outdoor air pollution sources are avoided near the building			
Energy Efficiency and Low Carbon Emissions			
The building has a plan to achieve net zero carbon buildings by 2025?			
The building is all electric- Including air conditioning systems, hot water, cooking and appliances			
At least 20% of building energy is provided by on-site renewable energy			
Opportunities to utilise natural light have been achieved			
All lighting is LED and flicker free			
Lighting systems provided include fit for purpose daylight and/or occupancy sensors			
Energy efficient heating, air conditioning and ventilation (HVAC) systems have been selected			
Fit for purpose and compliant energy metering has been agreed			
Energy efficient appliances and equipment have been purchased			
Climate Resilient Design			
A climate change adaptation review been undertaken to identify climate risks and adaptation measures are incorporated into the design?			
Material selection has considered measures to reduce the project's contribution to the urban heat island effect, including replacing roofing with light coloured material or using paint with a high solar reflective index (SRI)			
All refrigerants used are zero ODP and low GWP			
Battery storage options have been reviewed			
Existing trees and vegetation have been retained and integrated into the design – where trees and vegetation are removed, quantify in terms of numbers of trees, canopy area in square metres and amount of vegetation (other than trees) in square metres that are removed, and that are retained.			
Vegetation and landscaping have been designed to provide cooling functions to the building and surrounds, and the building encourages interaction with the natural environment			

Item	Yes	No	Describe: Where 'No' has been selected, please provide detail explaining why this requirement hasn't been met
Water Conservation			
Water efficient fixtures, fittings and appliances have been installed			
The building incorporates rainwater and/or recycled water for toilet flushing and site irrigation			
WSUD measures have been incorporated for stormwater management			
Fit for purpose and compliant water metering has been agreed			
Health and Wellbeing			
Opportunities to incorporate nature have been included			
The location of the building encourages the use of more sustainable transport options such as walking, cycling, car sharing and public transport.			
The building includes fit for purpose cyclist facilities, showers, secure lockers and under cover bike storage			
Does the building include any additional initiatives to promote wellbeing and social sustainability?			
Sustainable Materials			
Sustainable materials have been incorporated as per the ESD Specification • VOC Levels in Paints, Sealants and Adhesives • Lead Content in Paints • VOC Levels in Carpets • Composite Wood Products • Timber • Steel • Concrete • PVC • Insulation • Product Certification • Third Party Certification • Environmental Product Declarations (EPD) • Product Stewardship • Local Content • Recycled Content • Furniture			
The embodied energy of materials has been considered and incorporated			
Natural materials, such as timber and stone, have been utilised			
Local materials have been prioritised			
At least 90% of construction waste has been recycled			
Waste and recycling storage areas are included			

Appendix C ESD Requirements Checklist – Operations and Maintenance

*All ESD requirements are considered to be minimum requirements, unless not applicable for the project. The reason for **not** including any of the requirements must be provided on the checklist for review by the project team*

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Details	
Type of works:	
Description of proposed works:	
Works to be completed by:	☐ Internal staff ☐ External contractors
Building location:	
Gross floor area (m^2):	
Contact details *(to be completed by person compiling checklist)*	
Name:	
Role:	
Contact details:	
Date:	

ESD Requirements	**Description**
Describe the maintenance to be undertaken	Tick the relevant box: ☐ Hot water ☐ Use of paints, sealants and adhesives ☐ HVAC ☐ Composite wood products ☐ Lighting ☐ ICT equipment ☐ Electrical appliances ☐ Plumbing ☐ Furniture ☐ Carpets Other:
Estimated budget and duration of works	
Have the works been undertaken in line with the ESD Requirements (Appendix A)?	Tick the relevant box and provide details: ☐ Yes ☐ No Details:

Which sustainable outcomes have been considered in the maintenance scope?	
If maintenance works include energy related systems, i.e. HVAC or lighting, has the supplier been consulted to advise on energy efficient options?	
If maintenance works include water related systems, have water efficient fixtures been selected? Can the project be connected to rainwater/recycled water?	
If the maintenance works include materials changes, please describe how the Sustainable Maintenance Requirements have been met.	
Are there any other opportunities for improvements in maintenance activities that have been identified and should be highlighted for future consideration (or funding if required)?	