

POLICY NAME

Buildings Policy

DATE ADOPTED

22 November 2021

REVIEW DATE

November 2025

COUNCIL MINUTE NUMBER

276

RELATED DOCUMENTS

Refer to Page 4

RESPONSIBLE DEPARTMENT

Sustainability and Resilience

POLICY TYPE

Council

Purpose

The purpose of this Policy is to incorporate sustainability principles into the design, construction, refurbishment, and ongoing management of Council's building assets to help ensure they are well designed, fit for purpose, comfortable, efficient, and environmentally sound.

Through the implementation of this Policy, Council will ensure our buildings are designed for the long term, maximise resource efficiency and reduce ongoing operational costs.

Policy Statement

It is Council policy to design, construct, manage, maintain, operate, renew and upgrade new and existing buildings sustainably and in a way that ensures buildings are robust, safe and efficient.

Scope

The Policy applies to all Council owned and operated buildings that are either under the direct management of Council, managed by a management committee, or under the control of lessees and licences.

The Policy is applicable to all building projects/works associated with:

- The design and construction of new Council buildings; and
- The refurbishment, extension, retrofit, maintenance and management of existing buildings until their final demolition.

The policy is relevant to:

- All Council staff, management bodies, contractors and sub-contractors involved in the design, construction, refurbishments, maintenance, retrofits and management of Council's building assets;
- Tender specifications, contract development and purchasing decisions to complete and maintain capital works and building improvement projects (as required); and

- Works in-kind, as part of Voluntary Planning Agreements (VPA) and Section 94 plans that include buildings that will transfer to Council ownership.

POLICY:

Objectives

The objectives of this Policy are to:

- Create well designed, robust structures that maintain a safe and comfortable environment for staff and visitors;
- Reduce the environmental impacts and improve the resource efficiency and environmental performance of Council buildings;
- Encourage the use of renewable energy sources and NET zero emissions;
- Encourage the use of sustainable building materials and light-coloured materials and surfaces;
- Demonstrate a circular economy; including reuse and recycling of building materials at end life and/or building refurbishment/retrofits;
- Reduce impervious surfaces surrounding the building envelope;
- Provide a healthy indoor environment to enhance occupant health and wellbeing;
- Reduce the operational and maintenance costs associated with Council buildings; and
- Demonstrate leadership to the community by adopting and promoting sustainable building design and management practices.

This policy recognises that improving the sustainability of our buildings is not limited to design and construction but incorporates ongoing operational practices.

This will be achieved by:

- Providing a framework to embed sustainability into the everyday practices of staff, management bodies, and occupants of Council owned buildings;
- Promoting behaviour change through information and training; and
- Monitoring the consumption of resources and the installation of sustainable assets at individual facilities.

Application of the Policy

In applying this policy, Council will ensure that due consideration is given to the environmental, financial, social, and governance aspects of all works surrounding the design, construction, and ongoing management of Council owned buildings. This will include the incorporation of sustainability principles into documentation such as project briefs, tender documents, contracts, and lease/tenancy agreements where appropriate.

Throughout all stages of design, construction, and ongoing management, project managers are required to consult with stakeholders as appropriate and provide them with feedback on outcomes and the issues addressed.

To ensure this policy is adhered to the project manager will also be responsible for implementing a suitable monitoring program to make sure that all appropriate information is included in project documents, and that contracts and copies of any certification / documentation (e.g. Green Star) are kept on file and referenced as part of a design certification process at 'practical completion' of the building.

New Buildings & Refurbishments

It is the policy of Council that all new building projects optimise the use of environmentally appropriate materials in construction and are made to be resource efficient by incorporating materials, fittings and appliances which minimise energy and water use. New building projects are also to incorporate universal design principles, elements that improve the comfort of the end user, generate cost savings, utilise the local economy, and demonstrate leadership to the community by adopting and promoting sustainable building design.

The extent of application of this policy and its tools will depend on the size of the project. The detail and complexity of sustainability requirements in facilities will be proportionate to their size and end use.

For large capital works projects greater than \$10 million, including new Council buildings and substantial refurbishment of Council buildings, for example those that are completed as Capital Improvement projects, Council will:

- Achieve a 5-star Green Star rating for all new Council building projects with formal certification required.
- Option to achieve a 6-Star Green Star rating with formal certification for 'showcase constructions', where Council will deliberately trial new technologies, innovations or more ambitious targets. Where this is the case, this should be identified before the project budget has been allocated so the appropriate resources can be applied to the project. This will highlight World Leadership;
- All projects registered for Green Star Buildings must achieve a Certified rating within two years from practical completion of the project; and
- For car parks or infrastructure projects where an applicable Green Star rating/assessment tool may not exist, must meet all mandatory criteria and at least 30% of the desirable criteria in the *Sustainable Building Design Checklist* (Appendix 1).

For smaller capital works projects and minor refurbishment up to \$10 million, for example those projects that are completed as part of the ongoing Asset Renewal program, Council will:

- Meet all mandatory criteria and at least 30% of the desirable criteria in the *Sustainable Building Design Checklist* (Appendix 1), within the scope of works.

The scope of all works will be decided with due consideration of Council's Building Asset Management Plan and the future life expectancy of built assets to ensure that the level of investment is appropriate to the future plans for the building.

Retrofits and Maintenance Works

Council will ensure works to existing Council buildings will:

- Meet all mandatory criteria and at least 30% of the desirable criteria in the *Sustainable Building Retrofit, Maintenance & Operations Checklist* (Appendix 1) that are within the scope of works.

The upgrade of existing buildings will be undertaken as part of an ongoing program utilising funding from maintenance budgets and sources such as grants and the Sustainability Revolving Fund where appropriate. No timeframe has been set for the compliance of existing buildings as this will be dependent on available funding.

The scope of all works will be decided with due consideration of Council's Building Asset Management Plan and the future life expectancy of built assets to ensure that the level of investment is appropriate to the future plans for the building.

Management and Operational Performance

It is the policy of Council that the management and operational practices of existing Council buildings are undertaken in a sustainable manner.

To achieve this Council will:

- Monitor the performance of new Green Star certified buildings by undertaking ratings using either Green Star – Performance or NABERS. For NABERS, a 5-star rating or higher should be targeted.
- Develop and implement site specific Building User Guides as appropriate and provide training to relevant staff/ volunteers;
- Ensure buildings are managed with a sustainable approach to water and energy conservation and waste minimisation;
- Ensure that relevant staff, management bodies, and building occupants are trained in building systems and that relevant permanent instruction signage is installed;
- Use of low impact/ low toxicity and environmentally friendly cleaning products within the building by building users and cleaning staff, and include this list in the Building User Guide;
- Monitor the generation of waste and recyclable materials;
- Use Council's Data Management System (DMS) to monitor the use of energy and water, and investigate/address any significant increase in consumption; and
- Use Council's Asset Management System (AMS) to track the installation and upgrade of sustainable fixtures and appliances in buildings.

Policy Review

The Policy is effective from date of adoption and will be reviewed after a period of four years.

Related Policies / Legislation

This Policy is to be read in conjunction with the following documents:

Council Documents:

- Sustainable Purchasing Supply Policy
- Crime Prevention Through Environmental Design Development Control Plan
- Water Sensitive Urban Design Policy
- Building Asset Management Plan

External Documents:

- Building Code of Australia (National Construction Code)
- Green Building Council of Australia – Green Star rating tools

Definitions & Abbreviations

Green Star	Green Star is a comprehensive, voluntary environmental rating system that evaluates the sustainable design and construction of buildings. Green Star was developed for the property industry in order to standardise and promote sustainable building practices. Projects are awarded one of the following ratings: 4 Stars (Best Practice), 5 Stars (Australian Excellence) or 6 Stars (World Leadership).
Energy Star	Energy Star (trademarked ENERGY STAR) is an international standard that independently certifies the energy-efficiency of appliances (such as kitchen and laundry appliances, air conditioners and televisions) and applies an Energy Star rating. Products are rated from 1 to 5 stars based on comparative assessment of the appliance's energy efficiency and estimated annual energy consumption (usually kilowatt hours/year). The greater the number of stars the higher the energy-efficiency.
Universal Design	Universal design refers to broad-spectrum ideas meant to produce buildings, products and environments that are inherently usable to all people irrespective of age, size or ability.
Crime Prevention Through Environmental Design	Crime prevention through environmental design (CPTED) is a multi-disciplinary approach to deterring criminal behaviour through environmental design.
Water Sensitive Urban Design (WSUD)	Water Sensitive Urban Design (WSUD) is the sustainable management of water in urban areas through intelligent and integrated design. It takes into account all the elements of the urban water cycle including potable (drinking quality) water, rainwater, wastewater, stormwater and groundwater. WSUD aims to mimic natural systems to support healthy ecosystems and minimise negative impacts on the natural water cycle and receiving waterways.
NABERS	National Australian Built Environment Rating System (NABERS) is a performance-based rating system for existing offices, hotels, shopping centres and data centres. It measures the energy efficiency, water usage, waste management and indoor environment quality of an existing building and provides a star rating based on this data from 1 to 6 stars - 1 Star (Poor); 2 Stars (Below Average); 3 Stars (Average); 4 Stars (Good); 5 Stars (Excellent) and 6 Stars (Market Leading). A building must be operational and occupied for at least 12 months prior to an assessment.

Acronyms

AS	Australian Standard
BCA	Building Code of Australia
CoP	Coefficient of Performance
CPTED	Crime Prevention Through Environmental Design
DCP	Development Control Plan
EMP	Environmental Management Plan
HVAC	Heating, Ventilation and Air Conditioning
NABERS	National Australian Built Environment Rating System
NCC	National Construction Code
WELS	Water Efficiency Labelling Scheme
WSUD	Water Sensitive Urban Design

Document Control

Policy History	Date

Appendix 1: Sustainable Building Design Checklist, and the Sustainable Building Retrofit, Maintenance and Operations Checklist

As per the Policy, there are Checklists that must be adhered to for smaller council capital works and refurbishments up to \$10million, and for retrofits and maintenance works. The Checklists are provided below.

Sustainable Building Design Checklist:

The sustainability requirements outlined in the Sustainable Building and Design Checklist apply to all capital works projects for new Council buildings and refurbishment of Council buildings up to the \$10 million threshold.

The requirements in this Checklist are written to assist with specific product selection and/or for direct insertion into tender specification documents.

This Policy and Checklist will be applied from project conception to ensure that initial project scope and budget preparation includes these minimum requirements. Council will ensure new Council buildings and refurbishments implement all mandatory criteria and at least 30% of the desirable criteria from the Sustainable Building Design Checklist that are within the scope of works.

Sustainable Building Retrofit, Maintenance and Operations Checklist:

The sustainability requirements outlined in the Sustainable Building Retrofit, Maintenance and Operations Checklist apply to the retrofit, maintenance, and operational works of existing Council buildings. Council will ensure works to existing Council buildings will implement all mandatory criteria and at least 30% of the desirable criteria from the Sustainable Building Retrofit, Maintenance & Operations Checklist that are within the scope of works.

Checklist Criteria

The mandatory and desirable criteria for the Sustainable Building Design Checklist and the Sustainable Building, Maintenance and Operations Checklist are provided in the table below.

The Criteria in the Checklists are defined as Sustainable Building Requirements or Other Building Requirements.

M = Mandatory D = Desirable

Where there is no M or D provided for criteria for a building type in the checklist this means the criteria is not applicable.

Applicable Checklists		Sustainable Building Design Checklist			Sustainable Building Retrofit, Maintenance and Operations Checklist		
Requirements	Action	Buildings & Community Facilities e.g. Libraries, Council Offices, Childcare Centre, Neighbourhood Centres, Aquatic & Recreational Centres, Retail/Commercial Spaces, and/or similar	Public Toilets & Amenity Blocks	Multilevel Carparks	Buildings & Community Facilities e.g. Libraries, Council Offices, Childcare Centre, Neighbourhood Centres, Aquatic & Recreational Centres, Retail/Commercial Spaces, and/or similar	Public Toilets & Amenity Blocks	Multilevel Carparks
SUSTAINABLE BUILDING REQUIREMENTS							
MANAGEMENT							
Responsible Construction Practices	A comprehensive project specific Environmental Management Plan, including a Waste Management Plan, must be developed to manage environmental issues from excavation, construction activities and demolition works, and must be in place throughout the duration of the project.	M	M	M			
	No topsoil is to be removed from the site during the construction process and cut and fill volumes to be balanced on site.	D	D	D			
	The engagement of a builder/contractor for construction works that has undertaken the 2-day HIA GreenSmart Professional Training course OR that has similar relevant professional training by an industry association (e.g. Master Builders Australia) OR that has demonstrated experience in the construction of sustainable buildings.	D	D	D			
	Undertake a Tree Impact Assessment as part of the planning process prior to any onsite work in accordance with Council's ' <i>Street and Park Tree Management Plan</i> ' document, and responsive to the ' <i>Australian Standard AS 4970- 2009 Protection of trees on development sites</i> '.	M	M	M			

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	Common trenching of services / utilities and planning/coordination to avoid rootzones of existing and new trees	M	M	M			
Equipment	Ensure all equipment, including but not limited to, the Building Management System (BMS), HVAC, water tanks, and solar panels have full operational and management manuals to ensure they are maintained and checked to run at peak efficiency with biannual check-ups.	M	M	M	M	M	M
	Individual water, electricity and gas meters are required for all separate buildings. Install sub-meters with the capability for remote monitoring on all new and existing buildings where there are multiple tenancies/uses.	M	M	M	M	M	M
PLANNING & DESIGN							
Universal Design	<p>The design is to incorporate Universal Design principles, so the building, products and environment/landscape are accessible to all people.</p> <p>To achieve this the design is to apply the 7 Universal Design Principles listed below:</p> <ol style="list-style-type: none"> 1. Equitable Use. The design is useful and marketable to people with diverse abilities. 2. Flexibility in Use. The design accommodates a wide range of individual preferences and abilities. 	M	M	M	M	M	M

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	<p>3. Simple and Intuitive Use. Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.</p> <p>4. Perceptible Information. The design communicates necessary information to the user, regardless of ambient conditions or the user's sensory abilities.</p> <p>5. Tolerance for Error. The design minimizes hazards and the adverse consequences of accidental or unintended actions.</p> <p>6. Low Physical Effort. The design can be used efficiently and comfortably and with a minimum of fatigue. Doors that are easy to open by people with a wide variety of physical characteristics demonstrate the application of this principle.</p> <p>7. Size and Space for Approach and Use. Appropriate size and space is provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility.</p>						

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	<p>Ensure suitable access ramps for persons with a disability, including:</p> <ul style="list-style-type: none"> Ramps must provide access to public transport, outdoor recreational areas or the ground floor of buildings or car parks. Grade must not exceed 1:14 and must comply with AS 1428.1–2001, Design for access and mobility—General requirements for access—New building work. 	M	M	M	M	M	M
Surveillance	New structures are to be located in clear view of the public and not obstruct views to or from public spaces, assisting with passive surveillance.	D	D	D			
	An internal specialist and/or NSW Police is to be consulted with for a Crime Prevention through Environmental Design (CPTED) assessment of the proposed design (as per the agreed Protocol for the Review of Development Applications).	M	M	M			
BUILDING FABRIC							
Walls, Roofs, Floors, Glazing	Building fabric & glazing is to be minimum of 10% better overall than NCC Section J	M	M		M	M	
	Retrofit insulation wherever possible into renovations and extensions.	M	D		M	D	
	Insulant products used in the building must be zero ozone depleting substances including wall, floor, ceiling and roof insulation, acoustic insulation and	M	D		M	D	

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	insulation around the hot water tank, pipework and ductwork.						
	Insulant products used in the building must have reduced Global Warming Potential (GWP) in manufacturing, including wall, floor, ceiling and roof insulation, acoustic insulation and insulation around the hot water tank, pipework and ductwork.	D			D		
	Structures are to be robust, strong enough to resist vandalism.	M	M	M			
	Roof structures are to be trafficable.	M	M	M			
	Install Roof Access System to comply with the current requirements of Australian Standards (AS) and the National Construction Code (NCC).	M	M where applicable	M where applicable			
	If guttering is required ensure design requires low maintenance. Stormwater from roof is to be collected in dishes, grated drains or WSUD elements below roof perimeter area where required.	M	M	M			
	Preferably no eaves gutter or box gutters, with drainage filtered naturally before entering drains/ rivers. If gutters are fitted, covers/debris catchments are to be applied to prevent blockages.	D	D	D			
	Install extraction/whirlybird roof ventilation equipment.	D	D		D	D	
	Maximise the use of natural light and use passive design principles.	M	D				

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Daylight, shading and windows	Provide adequate daylight for all spaces. At least 40% of the principle averaged across the building must receive high levels of daylight with no less than 20% on any floor or tenancy (whichever is smaller). Calculating daylight either through: <ul style="list-style-type: none"> Manual calculations: Calculations must comply with the GBCA's Green Star Daylight and Views Hand Calculation Guide. Daylight autonomy: High Levels of daylight are deemed to have at least 160 lux due to daylight during 80% of the nominated hours. 	D					
	Provide fixed or adjustable external or internal glare control/shading devices of all spaces that are occupied (excluding service areas e.g. laundry, kitchen, bathroom, storage) that can be adjusted by building users - generally fixed to north and adjustable to all other orientations for external shading. Shading should prevent all direct sunlight entering the building through glazing between the end of October to the end of March between the hours of 9am and 7pm. A shading analysis should be provided to demonstrate compliance.	M			M		
	Use of indigenous and drought tolerant tree plantings to provide shading of buildings that will not obstruct or impact on the capacity of renewable energy technology.	M	D		M	M	

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	Install external shading (a minimum of 92% UV factor and 82% shade factor) and tree plantings where significant external activities occur, for example play areas and seating areas.	M			M		
Building Sealing	Building sealing should be undertaken as per BCA Section J4 Building Sealing.	M	M		M	M	
	Where deemed suitable, include air locks with effective functional dimensions (or use low-energy revolving doors) for primary entrance into a temperature-controlled room. Place entrances out of prevailing summer and winter winds.	D					
LIGHTING							
Technology	All luminaires equal to or more energy efficient than LED.	M	M	M	M	M	M
Illumination	Lighting illumination power density (LPD) to be 10% better than NCC overall across the building (indoor lighting).	M			M		
	Lighting to have minimum colour rendering index (CRI) of 90 for internal spaces.	M			M		
	Design lux levels of between 240 minimum and 280 maximum for general lighting unless otherwise specified, combined with task lighting (e.g. desk lamps, directional spotlights, built in workstation lighting etc.) in specific areas when higher lux levels are required (indoor lighting). Lower lux levels (80) for corridors, walkways, storerooms, etc. Refer to compliance with Section J of NCC.	D				D	

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	Roof-lights of all spaces that are occupied (excluding service areas e.g. laundry, kitchen, bathroom, storage, etc.) are to be fitted with either external or internal glare control/shading devices that can be adjusted by building users.	M			M		
	Light from all external light fittings must not be directed upwards (without falling on a surface with the aim of illuminating it) or beyond the site boundaries.	M	M	M	M	M	M
Control systems	Lighting control to be linked to building management systems (BMS) and/or security system when included in the project. When no BMS or security system is required, lighting control should revert to occupancy sensors, as per below.	M	D	D	M	D	D
	Motion detectors in all areas with inconsistent use such as toilets, storerooms, meeting rooms, etc.	M			M		
	Sensors to be positioned above the entry of the room facing the activity area unless otherwise specified. Sensors not to be positioned to face doorways.	M			M		
	All external lights to have appropriate controls such as daylight sensor/timer switch.	M	M	M	M	M	M
	The electric lighting of all occupied spaces over 50m ² (excluding service areas e.g. laundry, kitchen, bathroom, storage, etc.) to be zoned so as to allow separate control for each area. Lighting controls must be labelled, centrally located and accessible to occupants. Use of daylight to be maximised.	D					

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Other	Design for easy access to change lights.	M	M	M	M	M	M
HEATING VENTILATION & AIR CONDITIONING (HVAC)							
Natural ventilation and passive cooling	Use passive design principles to avoid excessive heat gain, including: Minimise west facing glazing, install fixed external shading to north glazing, install adjustable external shading to east and west windows and glazed doors, zone spaces to shut off rooms not in use and cool only rooms being used, locate non-habitable rooms on the west as a buffer from heat gain. Maximise openable windows and cross ventilation, use windows that maximise ventilation such as louvre and casement. Use natural ventilation or a mix of natural and mechanical ventilation. Use of indigenous and drought tolerant tree plantings to provide shading of buildings that will not obstruct or impact on the capacity of renewable energy technology.	M	D		M	D	
	Ceiling fans shall be considered in any naturally ventilated or mixed mode spaces to reduce need to air-conditioning operation. Ceiling heights to be a minimum of 2.7 metres in occupied rooms so that ceiling fans can be installed safely.	D	D		D	D	

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Passive heating	Maximise passive winter heating with north facing windows, double glazing, deciduous trees and internal thermal mass that is insulated.	D					
HVAC Technology	Preference heat pump technology for heating and/or cooling instead of natural gas.	M			M		
	If HVAC systems are required, inverter type air conditioners are to be installed with a CoP >3.5 or Energy Star rating >3.5 (at the appropriate size), and with wall mounted timer control buttons.	M	D		M	D	
	Where continuous 100% fresh air is required (i.e. Gymnasiums), HVAC systems are to use a closed loop heat exchange technology with conversion efficiency greater than 75% to precondition the fresh air from the exhaust air.	M					
	HVAC systems must meet Minimum Energy Performance Standard or above consistent with AS/NZS 3823.2:2013, Performance of electrical appliances—Air conditioners and heat pumps. Refer to Part 2: Energy labelling and Minimum Energy Performance Standards (MEPS) requirements.	M			M		
Economy features	Design plans must demonstrate that Heat Ventilation and Air Conditioning (HVAC) has been sized according to building load requirements.	M					
	Motorised and fully modulating economy dampers to be fitted to all integrated Heat Ventilation and Air Conditioning (HVAC) systems (packaged or split	M			M		

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	ducted) with 100% outside air capability that are connected to a Building Management System (BMS)						
	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) or BMS. Fan or pump motors to be direct drive. Belts and pulleys are not to be used.	M			M		
	All heat pumps to employ variable refrigerant flow (i.e. Electronically Controlled variable Thermostatic Expansion (TX) valves or variable speed refrigerant flow/compressors)	M			M		
	Submetering to be considered for all central plant items (boilers, domestic hot water, chillers, VRF etc.) with facility for ongoing monitoring of system energy consumption.	D			D		
Control Systems	All HVAC changes 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; pump speeds, CO2 sensor limits and thresholds, staging according to conditions.	M			M		
	All systems to utilise variable supply based on occupancy using CO2 monitoring and/or occupancy detection for zone ventilation control.	M			M		
	Unitary controls – where systems employ unitary controls only, supplementary control shall be available for high level interface (HLI) to BMS or	M			M		

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	other systems as required. HLI shall be open protocol per relevant industry standards.						
	Building Management Systems (BMS) – Any BMS deployed to provide control and / or monitoring of equipment shall be capable of HLI to existing BMS used by council for supervisory control and data acquisition. – Niagara Tridium System	M			M		
	All occupied rooms must be separately zoned so as to provide individual heating and cooling control for each area. Heating and cooling controls must be operated via a wall mounted timer control button, set to an optimal performance depending on building use (usual is between 22°C in winter and 24°C in summer), with temperature controls locked (encased) and not accessible to building occupants.	M			M		
	If a car park is enclosed and a mechanical ventilation system is to be installed, carbon monoxide/dioxide sensors linked to variable speed ventilation fans must be installed in appropriate locations.	M		M	M		M
Refrigerants	All refrigerants must be zero ODP in composition and manufacture. Refrigerant leak detection must be provided for water cooled systems.	M			M		
	Split type and individual room air conditioners are to use R32 type refrigerant	M			M		

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ENERGY							
Renewable Energy	Install renewable energy technology on-site (e.g. solar panels, solar thermal, wind generation, hydro) based on site feasibility.	M	M	M	M	M	M
	For the construction of new buildings ensure roof structures are structurally sound to support potential solar panel installations, and design roof space to maximise the capture of solar energy e.g. create unobstructed roof space, ideally pitched towards north and allowing for penetration free anchoring.	M	M	M			
	Ensure any roof-mounted solar infrastructure is safe and accessible for service/cleaning as required.	M	M	M	M	M	M
	No structures or roofing element to shade any proposed or existing solar panels.	M	M	M	M	M	M
HOT WATER							
Hot Water Technology	Preference for high efficiency heat pump electric hot water systems that can link to existing, new or future solar PV. Gas hot water should be avoided. Where gas boosted hot water is required this will be acceptable only with agreement by the Project Manager. See REC Register for small-scale technology certificates (STCs) for solar water heater or air source heat pump systems http://www.cleanenergyregulator.gov.au/RET/Scheme-participants-and-industry/Agents-and-installers/Small-scale-technology-	M	M		M	M	

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	certificates/Creating-small-scale-technology-certificates						
	Hot Water heat pump technology to have Coefficient of Performance (CoP) Ratio 85% or better than the most efficient equivalent capacity unit available.	M	M		M	M	
	Where gas boosted hot water are required, gas boosters to be high efficiency and employ condensing technology at or greater than 96% net efficiency (including manifolded arrays where staged multiple units are required).	M	M		M	M	
Pipe insulation	<p>All hot water piping (flow and return) above 25mm Outside Diameter (OD) shall be insulated with preformed sectional glass wool or polyester insulation in accordance with NCC Specification J5.2c compliance requirements. 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 in accordance with NCC Specification J5.2c compliance requirements.</p> <p>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>	M	M		M	M	

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Requirements	Action	Buildings & Community Facilities e.g. Libraries, Council Offices, Childcare Centre, Neighbourhood Centres, Aquatic & Recreational Centres, Retail/Commercial Spaces, and/or similar	Public Toilets & Amenity Blocks	Multilevel Carparks	Buildings & Community Facilities e.g. Libraries, Council Offices, Childcare Centre, Neighbourhood Centres, Aquatic & Recreational Centres, Retail/Commercial Spaces, and/or similar	Public Toilets & Amenity Blocks	Multilevel Carparks
Control Systems	<p>Ring main hot water systems will include a digital time clock control mechanism that:</p> <ul style="list-style-type: none"> - prevents hot water circulation during non-occupancy hours. - starts ring main at least one hour prior (or greater if required for occupational and health and safety requirements) to building occupancy to circulate any accumulated bacteria through 60 degree water to kill any legionella bacteria. <p>Preference for connection to a Building Management System (BMS) or building security system.</p>	M	M		M	M	
WATER EFFICIENCY & STORMWATER							
Fixtures and fittings	<p>Shower heads: 4-star WELS, maximum 7.5L/min flow rate</p> <p>Shower taps: push button time delay variable temperature mixing valve</p> <p>Toilets: 4-star WELS minimum</p> <p>Urinals: 6-star WELS, sensor operated or waterless urinals</p> <p>Taps: 6-star WELS, push button or with sensor</p>	M	M	M	M	M	M

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Washing machine/ dishwashers/ other appliances	Minimum 5-star WELS or within one star of the best WELS rating available. Water efficiency of appliances can be determined by using www.waterrating.gov.au/choose/water-rating-label#star-rating	M			M		
Rainwater tanks	Buildings must incorporate appropriately sized rainwater tanks to supply a minimum of 80% of their non-potable demand. When the 80% demand threshold cannot be met, the use of non-potable sources shall be maximised and be considered on a merit basis. This is to be demonstrated using MUSIC modelling (or equivalent) as per Councils WSUD Technical Guidelines or relevant DCP.	M	M		M	M	
	To ensure continuous vegetation cover, rainwater tanks are to have an adequate pump and permanent automated irrigation system that delivers a minimum rate of 0.4 kL/m2/annum to irrigate gardens and landscaped areas. The systems also require sufficient filtration when connected to internal uses. Gutter guards, first flush diverters, etc. and consideration of the health implications and risks of spray irrigation systems needs to be considered.	M	M		M	M	
	Rainwater tanks must be installed in accordance with relevant DCP requirements.	M	M		M	M	
Stormwater	All new buildings (regardless of scale) must include treatment measures to meet the requirements of Council's WSUD Policy or relevant DCP (where appropriate).	M		M	M		M

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	This is to be demonstrated using MUSIC modelling (or equivalent) as per Councils WSUD Technical Guidelines or relevant DCP.						
	<p>Developments must maximise permeable areas and all stormwater from car park, hardstand and other impervious areas must be treated by rain garden or other vegetated WSUD features (subject to site constraints).</p> <p>A minimum of 25% of the site's on-ground car parking areas must consist of permeable paving for parking areas between 4 to 40 parking spaces. Greater than 40 car parking spaces, 10% of the site's car parking area must consist of permeable paving at ground level only.</p> <p>Subsurface drainage to be provided where permeable paving is applied.</p> <p>No permeable paving to be applied in disable parking areas.</p>	M		M	M		M
	Target: Where deemed suitable, 85% retention of stormwater on a lot, which may require a combination of rainwater tanks and infiltration rainwater gardens	D		D	D		D
Drainage	Ensure new work does NOT increase drainage problems. If gutters are not provided, concrete or bitumen areas are to extend past eaves where there is stormwater runoff to provide controlled runoff	M	M	M			

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	(unless alternative methods of water collection can be achieved). Extension should be minimum 1.2 m and be graded 1% away from building.						
MATERIALS							
Materials	Select sustainable materials from ecospecifier or GECA where possible. <ul style="list-style-type: none"> • www.ecospecifier.com.au • www.geca.eco/ 	D	D	D	D	D	D
	Consider the Life Cycle of all materials - select materials with a low embodied energy, that are durable, low maintenance, have a recycled content, that can be recycled, that have buy back or reuse schemes, etc.	D	D	D	D	D	D
Steel/ Metal	Preference steel suppliers who meet the objectives of the Green Star Responsible Products Framework https://new.gbca.org.au/rate/rating-system/responsible-products-framework/ i.e. have a valid ISO 14001 Environmental Management System certificate and are a member of the World Steel Association (WSA) Climate Action program (CAP).	D	D	D			
	Where possible use steelwork fabricators, steelwork processors and contractors that have signed up to the Environmental Sustainability charter of the Australian Steel Institute (ASI).	D	D	D			

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	https://www.steel.org.au/focus-areas/environmental-sustainability/environmentally-aware-steelwork-fabrication-and-pr/how-is-a-green-star-point-obtained-via-the-esc/						
Concrete	All concrete to have a recycled content and use recycled aggregate wherever possible	D	D	D			
Timber	All timber used to be Forest Stewardship Certified (FSC) or Program for the Endorsement of Forest Certification (PEFC) certified or reused and/or recycled.	M	M	M	M	M	M
	Use of cross laminated timber structural members (plantation) will be given precedence over native hardwood structural members.	D	D	D			
	Use of tropical hardwoods such as Merbau, Mirabow, Ipil, Kwila, Vesi are not permitted under any circumstances	M	M	M	M	M	M
	All engineered/composite wood products (particleboard, MDF, veneers, etc.), including office furniture and fit outs, to comply with E0 standard for formaldehyde levels.	M			M		
Poly Vinyl Chloride (PVC)	To reduce environmental and health impacts for building users, internal plastic materials (e.g. vinyl flooring and carpet underlays) should exclude PVC. Where PVC is used apply Best Practice Guidelines	M			M		

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	for PVC in the Built Environment by specifying eco-labels (e.g. Global-Mark Certified) that comply with the Green Star Responsible Products Framework i.e. Vinyl Council of Australia Best Practice PVC https://vinyl.org.au//in-greenstar/best-practice-pvc-product-register						
Internal surfaces and finishes	Certified Zero or Low Volatile Organic Compound (VOC) office furnishings, flooring and internal coatings (i.e. paints, adhesives and sealants).	M			M		
	Use of replaceable carpet tiles rather than broadloom carpet (tufted carpets, sold on rolls) wherever possible.	M			M		
	Plasterboard with recycled content.	D			D		
EQUIPMENT & APPLIANCES FIT OUT							
Equipment/ Appliances	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 minimum) / oven / cook top / range hood/ hot water urns (4-star energy rating minimum) Energy efficiency of appliances can be confirmed on the website www.energyrating.gov.au	M			M		

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	Water efficiency of appliances can be determined by using www.waterrating.gov.au/choose/water-rating-label#star-rating Gas appliances to be avoided where possible.						
	Highest available energy efficient ventilation systems, extraction fans, etc.	M			M		
	Refrigeration equipment to be designed so rejected heat can be expelled easily to outside or reused for heating within building.	D			D		
	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.	M	M where applicable		M	M where applicable	
	Tea and coffee boilers to include timers so they switch off over weekends and overnight. No urns to be used.	M	M where applicable		M	M where applicable	
TRANSPORT							
Electric Vehicles	Infrastructure to allow for future of electric charging in the parking area*. This means ensuring the building has EV distribution boards to allow for future connection for EV's. These distribution boards must be located so that no connection requires a cable of more than 50m from the parking bay to the connection. *Any building with over 20 car parking spaces.	M		M	M		M

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	A minimum of 2 dedicated parking spaces to be provided for electric vehicles as well as associated charging infrastructure commensurate to the size of the project	M		M	M		M
	A minimum of 2 dedicated parking spaces to be provided for car sharing or similar schemes. Car sharing parking spaces must include an electric vehicle connection.	M		M	M		M
	Accessible parking to be provided	M		M	M		M
	Drop off/pick up zones to be considered	D			D		
Bike parking	Bicycle parking for 10% of staff and/or visitors separated from the primary vehicle entrance to ensure safety, with appropriate signage. Covered bike parking wherever possible.	M		M	M		M
	Provide signposted end of trip facilities, including showers and change rooms.	M		D	M		D
BIODIVERSITY & LANDSCAPE							
	The project is to incorporate design features that: - Enhance the ecological character and biodiversity of the site. - Result in no net loss of biodiversity on the site.	M	M	D			

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	- Provide high quality amenity green space for building occupants						
Landscape	Use of drought tolerant plantings when landscaping that will not obstruct or impact on the capacity of renewable energy technology. Minimum 12-month water regime to be applied to plant establishment period.	M	M where applicable	M where applicable	M	M where applicable	M where applicable
	Retention of existing on-site flora or habitat with the retention of established trees, indigenous grasses, etc.	M	M where applicable	M where applicable	M	M where applicable	M where applicable
	Where regular irrigation of gardens is required install a drip irrigation system.	D	D where applicable		D	D where applicable	
	Application of Cooling the City actions (refer to Cooling the City section)	M	M where applicable	M where applicable	M	M where applicable	M where applicable
Biodiversity	Local ecology is enhanced with new indigenous plantings or habitat creation via wetland creation, habitat creation or significant revegetation.	D	D	D	D	D	D
	Fauna habitat enhancement with the provision of urban habitat opportunities (such as nesting boxes, ponds, bird friendly plantings, etc). Decide planting lists and actions in conjunction with NPWS or other local conservation groups.	D	D	D	D	D	D

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WASTE & RECYCLING							
Waste Streams (Residual, Recycling, Organics)	The development to incorporate integrated on-site waste collection infrastructure to permit best practice resource recovery for each waste stream (residual, recycling and organics) produced on-site in accordance with Penrith Councils <i>'Industrial, Commercial and Mixed-Use Waste Management Guideline'</i> document.	M	M where applicable	M where applicable	M	M where applicable	M where applicable
	Waste collection facilities to be of sufficient size to accommodate the volumes of waste anticipated for each waste stream in accordance with Penrith Council's <i>'Industrial, Commercial and Mixed-Use Waste Management Guideline'</i> document.	M	M where applicable	M where applicable	M	M where applicable	M where applicable
	Waste collection infrastructure to be designed to permit unobstructed access for Council's waste collection vehicles to perform scheduled collections. Waste collection vehicle specifications are outlined within Council's <i>'Industrial, Commercial and Mixed-Use Waste Management Guideline'</i> document.	M	M where applicable	M where applicable	M	M where applicable	M where applicable
Construction & Demolition	Recycle and/or reuse at least 80% of demolition and construction waste and adopt infrastructure /practices to implement Circular Economy Principles responsive to the <i>'National Waste Policy: Less Waste More Resources 2018'</i> document.	M	M	M	M	M	M

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COOLING THE CITY							
Cooling	For new buildings 75% of the total project site area comprises building or landscaping elements that reduce the impact of heat island effect (UHI), or when upgrading sites install building or landscaping elements that reduce the impact of the UHI. Potential options include canopy cover, green roofs, light roofing materials and hard surface, water bodies and solar PV to reduce urban heat island effect and the cooling load. (Roofing material preference: Colorbond Coolmax or approved equivalent).	M	M	M	M	M	M
	Use light coloured surfaces or cooling sealants e.g. for carparks, hard outdoor surface areas, etc.	M	M where applicable	M	M	M where applicable	M
	Application of Water Sensitive Urban Design requirements (refer to Water Efficiency & Stormwater section).	M			M		
	Application of Landscape requirements (refer to Biodiversity and Landscape section).	M			M		

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BUILDING MANAGEMENT							
User guides	A Building User Guide is to be developed for the project and training provided to relevant staff/volunteers.	M	M	M			
	Undertake stakeholder consultation with the community, internal stakeholders and prospective building users, and provide them with feedback on outcomes and the issues addressed during the consultation exercise.	M	M	M	M	M	M
OTHER BUILDING REQUIREMENTS							
Materials	Materials are to be robust and fit for purpose. Installation to be sturdy, as per manufacturer's recommendations or as per Structural Engineer's details.	M	M	M	M	M	M
	Colours to be used must be sourced from standard colour catalogues. The use of standard colours assists with availability for maintenance.	M	M	M	M	M	M
	Low maintenance and non-slip finish required. Non-slip finishes to comply with the current Building Code and other statutory requirements.	M	M	M	M	M	M
	Sheet materials to be standard modules.	M	M		M	M	

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	Standard component sizes are preferred. Non-standard component sizes should only be used to eliminate safety issues.	D	D	D	D	D	D
Steel/ Metal	Metal structures to be manufactured from galvanized steel. Structure to be medium to heavy duty construction and to be designed and certified by a qualified structural engineer.	M	M	M	M	M	M
Signage	Internal & external signage is installed to provide relevant information and directions in line with Council's Wayfinding Manual and NCC requirements.	M	M	M	M	M	M
Other	Door locks to be protected where possible whilst providing easy access for authorised users.	M	M	M	M	M	M
	All keying to Council's master keying system.	M	M	M	M	M	M