8.13. North Sydney Sustainable Building Policy

AUTHOR: Danielle Birkbeck, Senior Sustainability Programs Coordinator
Albert Lo, Manager Property Assets

ENDORSED BY: Rob Emerson, Director Open Space and Environmental Services
Duncan Mitchell, Director Engineering and Property Services

ATTACHMENTS: Draft North Sydney Sustainable Building Policy
Final Sustainable Building Guidelines

PURPOSE:

The purpose of this report is to seek Council's endorsement of the draft North Sydney Sustainable Building Policy and associated Sustainability Guidelines for Council buildings.

EXECUTIVE SUMMARY:

The draft North Sydney Sustainable Building Policy and Sustainability Guidelines for Council Buildings have been developed to provide a framework to assist Council to achieve best practice sustainable building outcomes for its own facilities. By applying the Guidelines throughout the design, construction and verification process, Council also expects to achieve short, medium and long term financial and resource savings, minimising ongoing operational, maintenance and legacy costs.

FINANCIAL IMPLICATIONS:

The draft North Sydney Sustainable Building policy will affect the total value of individual projects, including significant lifecycle cost savings. Costs associated with individual projects will be assessed at the design stage.

RECOMMENDATION:
1.THAT Council endorse the attached draft Sustainable Building Policy for the purposes of public exhibition for a period of no less than 28 days.
2.THAT should no submissions be received; the policy be considered adopted without a further report to Council.

LINK TO COMMUNITY STRATEGIC PLAN

The relationship with the Community Strategic Plan is as follows:

1. Our Living Environment
1.2 North Sydney is sustainable and resilient

2. Our Built Infrastructure
2.1 Infrastructure and assets meet community needs

BACKGROUND

North Sydney Council has a long history of demonstrating excellence in sustainable building and design. Specifically, Council has been pro-active for many years in improving water and energy efficiency, as well as reducing greenhouse gas emissions in an effort to reduce its resource consumption and its impact on climate change. Council's achievements in this area have been recognised via industry awards for the Coal Loader Centre for Sustainability, the Ecologically Sustainable Development (ESD) Best Practice Project as well as the prestigious Green Globe Award which recognised a suite of Council's sustainable building achievements as well as other sustainability initiatives.

While the Asset Management Policy ensures that Council facilities are built and operated in a sustainable manner, it provides little detail to guide consistent and considered application of sustainability principles across Councils building asset portfolio. To formalise these sustainable building practices into a standardised framework, Council made a commitment in the 2018-21 Delivery Program to "Develop and implement energy and water efficiency guidelines for Council buildings" (Project 1.2.3.2). The recently adopted Environmental Sustainability Strategy also includes actions to implement sustainable building standards for Council owned facilities (CF2 and WC7).

CONSULTATION REQUIREMENTS

Community engagement will be undertaken in accordance with Council's Community Engagement Protocol.

DETAIL

Sustainable Building Policy Objectives

A 2013 study undertaken by Pitt & Sherry into environmentally efficient design in local government found that best practice environmentally sustainable design has significant lifecycle cost benefits with payback periods between 1.8 to 4.9 years, making such undertakings 'highly to extremely cost effective'. To ensure the draft policy goes beyond

"business as usual" and helps Council achieve these benefits, Ironbark Consulting prepared a business case analysis of three Ecologically Sustainable Development (ESD) target level scenarios based on data from 550 council facility audits. Of these, the PCG selected the "Best Practice" target as it was found to achieve a high amount of resource savings and the quickest financial payback.

In order to achieve this "best practice" target, the provisions of the policy aspire to Green Star ratings or equivalent, or sections of the Guidelines that are to be met as outlined below:

i) New major building works with a total design and construction value of ≥$10M should aspire to achieve a 5 Star Green Star rating or equivalent, OR comply with the Council Guidelines.
ii) New minor building works with a total design and construction value of <$10M should aspire to comply with the Council Guidelines.
iii) Major upgrades to existing buildings with a total design and construction value of ≥ $10M should aspire to achieve a 5 Star Green Star rating or equivalent, OR comply with the Council Guidelines.
iv) Upgrades to existing buildings with a total design and construction value of $200K <$10M should aspire to comply with the Council Guidelines.
v) Regular equipment checks and servicing by Council maintenance staff and contractors should aspire to comply with Part 3 of the Council Guidelines.
vi) Repair or replacement of building components or equipment should aspire to comply with Parts 2 and 3 of the Council Guidelines.

Sustainability Guidelines for Council Buildings

The Guidelines are a detailed technical document which accompany the policy. They help Council staff, consultants and contractors specify, evaluate and implement sustainability outcomes for a range of asset types and scales, including new builds, in line with this policy.

The document contains a wide range of specifications. Only specifications relevant to each project will apply. When writing a tender, request for quote or job order, Council will clarify which specifications within the Guidelines are relevant, and whether a Green Star rating is required. This avoids a "one size fits all" approach and allows Council some flexibility.

Responsibilities and Implementation

The main gap in achieving best practice ESD outcomes is often not in the prescription of specifications, but in the implementation process. The Guidelines seek to address this by embedding in them a detailed implementation process identifying roles, responsibilities and evidence needed to demonstrate effective implementation. Establishing clear responsibilities and implementation criteria at the outset of a project helps ensure that all parties involved in the process are accountable and that the Guidelines are implemented effectively and consistently.

SUSTAINABLE BUILDING POLICY

Policy Owner: **Director Open Space & Environmental Services**

Policy Category: **Strategic**

Categories: **1. Our Living Environment**

1. STATEMENT OF INTENT

1.1 The policy provides the framework to assist Council to invest in high quality design and construction for its own facilities, that achieves best practice sustainable building outcomes, while realising short-, medium- and long-term resource savings and avoid ongoing operational, maintenance and legacy costs.

1.2 In addition to financial savings, the policy delivers environmentally sustainable construction, and buildings that are comfortable, energy and water efficient with good indoor air quality, resulting in a wide range of health, social and economic benefits.

1.3 The policy aims to go beyond business as usual to exceed the sustainability criteria of statutory obligations such as the *National Construction Code* (NCC) but it does not replace them.

1.4 The policy will be implemented in conjunction with legislative obligations and/or relevant standards such as the NCC, Australian Standards and development controls.

1.5 The policy is supported by the "Sustainability Guidelines for Council Buildings" which provide detailed technical directions to implement the policy.

2. ELIGIBILITY

2.1 This policy applies to all councillors, staff, contractors and suppliers involved in designing, building, upgrading and maintaining Council owned buildings, and buildings where Council is a tenant.

3. DEFINITIONS

3.1 Sustainability Guidelines for Council Buildings ("the Council Guidelines") - a detailed technical document accompanying the policy to help Council staff,

consultants and contractors specify, evaluate and implement sustainability outcomes for a range of asset types and scales, including new builds, in line with this policy. Alternatives that go beyond individual specifications within the Council Guidelines are encouraged and will be considered on a case-by-case basis.

4. PROVISIONS

4.1 Building works should aspire to achieve best practice sustainable design outcomes equivalent to 5-star Green Star and/or 10-20% above the Minimum Energy Performance Standards of the NCC. To achieve this:

a) New major building works with a total design and construction value of ≥$10M should aspire to achieve a 5 Star Green Star rating or equivalent, OR comply with the Council Guidelines.

b) New minor building works with a total design and construction value of <$10M should aspire to comply with the Council Guidelines.

c) Major upgrades to existing buildings with a total design and construction value of ≥$10M should aspire to achieve a 5 Star Green Star rating or equivalent, OR comply with the Council Guidelines.

d) Upgrades to existing buildings with a total design and construction value of $200K to <$10M should aspire to comply with the Council Guidelines.

e) Regular equipment checks and servicing by Council maintenance staff and contractors should aspire to comply with Part 3 of the Council Guidelines.

f) Repair or replacement of building components or equipment should aspire to comply with Parts 2 and 3 of the Council Guidelines.

4.2 Council will determine application of Green Star on a project-by-project basis, and whether to achieve formal certification. In general, all projects except iconic, high profile or high budget (e.g. $30m>) projects will not need certification.

5. RESPONSIBILITY/ACCOUNTABILITY

5.1 Environmental Service Department staff will:

a) assist Council Project Managers in the implementation process as required;
b) coordinate staff training on implementing the policy and the Council Guidelines;
c) review the Council Guidelines every year to ensure the specifications remain best practice; and
d) in the first 2 years of the policy, coordinate monitoring and evaluation of the effectiveness of the policy and Council Guidelines in achieving sustainability outcomes by reviewing 2-3 multi-dimensional projects, or projects that demonstrate a varied project mix.

5.2 Council Project Managers, or their delegate, will:

a) oversee implementation of the policy and the Council Guidelines on a project-by-project basis;
b) identify which specifications within the Council Guidelines are applicable or not applicable to the project. And whether an accredited Green Star is required;
c) prepare relevant documents to ensure they communicate the applicable sections of the Council Guidelines and the compliance process; and
d) attend relevant meetings and site visits to confirm implementation.

5.3 Design Consultants will comply with the Council Guidelines and the implementation reporting process.

5.4 Building Contractors will:

a) ensure the Council Project Manager is informed of all implementation checkpoints ahead of time; and
b) comply with the Council Guidelines and implementation reporting process.

6. RELATED POLICIES/DOCUMENTS/LEGISLATION

The Policy should be read in conjunction with the following Council policies:

- Development Control Plan
- Procurement Policy
- Contracts Management Manual

The Policy should be read in conjunction with the following documents/legislation:

- National Construction Code
- Relevant Australian Standards

Version	Date Approved	Approved by	Resolution No.	Review Date
1	#	Council	#	

North Sydney Council

Sustainability Guidelines for Council Buildings

Prepared for North Sydney Council by
Ironbark Sustainability
Suite 8, 70-80 Wellington St, Collingwood 3066
ABN: 51 127 566 090
Ph: 1300 288 262 | info@realaction.com.au | www.realaction.com.au

Content

Attachments:

Sustainability Guidelines Report Template (Excel)

Staff Manual for the North Sydney Council Sustainability Guidelines for Council Buildings

PART ONE: INTRODUCTION AND IMPLEMENTATION REPORTING REQUIREMENTS

1. Introduction

This document outlines North Sydney Council's Sustainability Guidelines for Council Buildings (the "Council Guidelines"). The Council Guidelines apply to all Council owned new buildings, upgrades and maintenance activities.

The Council Guidelines aim to help Council staff, consultants and contractors specify, evaluate and implement sustainability outcomes and are appropriate for a range of asset types and scales, relating to all projects from small scale upgrades to new builds.

The intention of the Council Guidelines is to enable Council to invest in high quality design that achieves best practice sustainability, short, medium and long term resource savings and avoids ongoing operational, maintenance and legacy costs.

Developers of private and commercial properties in North Sydney are also encouraged to use this document as an optional guide for achieving best practice sustainability outcomes.

1.1 Navigation

Rely on the table of contents to navigate the document. The Council Guidelines are divided into three parts:

- **PART ONE: introduction, instructions and implementation reporting requirements for contractors.**
- **PART TWO:** specifications that relate to **new building projects, upgrades and equipment renewals**.
- **PART THREE:** specifications that relate to the **management and maintenance of Council buildings**.

1.2 Context

1.2.1 Background

Sustainability is one of North Sydney Council's (Council) core values. On 22 July 2019, Council became the 30th Australian Council to declare a climate emergency, recognizing that we are in a state of climate emergency requiring immediate action by all levels of government. The Council Guidelines align with objectives found in the North Sydney Development Control Plan 2013 (DCP), the Local Strategic Planning Statement (LSPS), Community Strategic Plan and Environmental Sustainability Strategy 2030. The Council Guidelines work towards enabling Council to become carbon neutral

1.2.2 Statutory and Planning

The Sustainability Guidelines for Council Buildings help implement Council's Sustainable Building Policy and works in conjunction with all statutory building and planning requirements.

For Council buildings, the Council Guidelines are in addition to any statutory obligations such as the National Construction Code (NCC) but do not replace them. The Council Guidelines are to be implemented in conjunction with legislative obligations and/or relevant standards such as the NCC, Construction Certificate requirements and the Australian Standards.

There is much crossover with related DCP sustainability provisions, which are referenced throughout the Council Guidelines. At no time shall these Council Guidelines be used to justify a reduction in sustainability standards compared to requirements within the DCP. However, there are times when they exceed them.

1.2.3 Benefits

A 2013 study found that best practice environmentally sustainable design has significant lifecycle cost benefits with payback periods between 1.8 to 4.9 years, making such undertakings 'highly to extremely cost effective'.[1] Similarly, *The Value of Green Star: A decade of environmental benefits* by the Green Building Council of Australia (GBCA) (2013) found that, on average, Green Star-certified buildings:

- Use 66% less electricity than average Australian buildings
- Produce 62% fewer greenhouse gas emissions than average Australian buildings
- Use 51% less potable water than average buildings
- Recycle 96% of their waste, compared with 58% for the average new construction project

In addition to financial savings, the Council Guidelines will deliver more environmentally sustainable construction, and buildings that are comfortable, energy and water efficient with good indoor air quality, resulting in a wide range of health, social and economic benefits.

1.3 Objectives and Targets

Projects must strive to be consistent with the following objectives of these Council Guidelines:

- Improve comfort, health and wellbeing outcomes for building users.
- Achieve short- and long-term savings and avoid ongoing operational, maintenance and legacy costs.
- Ensure best practice environmental and waste management, waste avoidance, reuse and recycling during all stages of design, demolition and construction, commissioning, operation of a building.
- Minimise energy use, and total operating carbon emissions.
- Maximise onsite renewable electricity and heat generation to help Council achieve carbon neutrality before 2030, including a transition away from using gas.
- Create buildings that are resilient to the impacts of climate change.
- Minimise water use by reducing potable water use and increasing water recycling and reuse.
- Minimize environmental degradation by managing stormwater quality and quantity.
- Encourage the use of robust, long-lasting, low carbon, reused and recycled materials to minimise environmental impact, and support manufacturers that promote environmental responsibility.
- Enhance biodiversity, wellbeing and passive design outcomes through sustainable landscaping and building design.
- Support an increase the use of public transport, walking and cycling including through fit for purpose end of trip facilities.
- Future proof infrastructure to accommodate clean energy vehicles such as electric vehicles.

[1] Pitt & Sherry, Harrington, 2013, *Environmentally Efficient Design Planning Policies* Cities of Banyule, Moreland, Port Phillip, Stonnington, Whitehorse and Yarra, Expert Evidence – Benefit Cost Analysis

The Council Guidelines go beyond "business as usual" to achieve a "Best Practice" ecologically sustainable development (ESD) target. Out of the three common target levels outlined below, Council has chosen to achieve a "Best Practice" target as a benchmark that exceeds minimum "Basic" sustainability guidelines and takes into consideration both conscious use of environmental recourses and economic practicality. For very large, high profile or flagship projects, Council may choose to exceed Best Practice and to aim for an "Excellence" target level.

Sustainability Target Levels

- Basic ESD Target: e.g. 4-star *Green Star* or 5-10% above Minimum Energy Performance Standards (MEPS) / NCC
- **Best Practice ESD Target: e.g. 5-star *Green Star* or 10-20% above MEPS / NCC**
- Excellence ESD Target: e.g. 6-star *Green Star* or 20-40% above MEPS / NCC

2. Instructions and Implementation Reporting Requirements

2.1 Who Should Use this Document?

Any contractor or Council representative involved in new building projects, upgrade projects and maintenance activities that take place on Council building assets must strive to achieve the Sustainability Guidelines for Council Buildings. See

Table 1 for details.

Council Sustainability staff will assist Council Project Managers in the implementation process as required, coordinate staff training on implementing the policy and the Council Guidelines and review the Guidelines annually to ensure the specifications remain best practice.

Council Project Managers, or their delegate, will oversee implementation of the policy and the Guidelines on a project-by-project basis, identify which specifications within the Guidelines are applicable or not applicable to each project, prepare relevant documents to ensure they communicate the applicable sections of the Guidelines and the implementation process and attend relevant meetings and site visits to confirm implementation.

Design Consultants will aspire to comply with the Guidelines and the implementation reporting process.

Building Contractors will ensure the Council Project Manager is informed of all implementation checkpoints ahead of time and comply with the Guidelines and implementation reporting process.

Developers of private and commercial properties in North Sydney are also encouraged to use this document as an optional guide for achieving best practice sustainability outcomes.

For Major New and Major Upgrade projects ≥$10 million, the projects may be required to achieve a 5-star Green Star rating or equivalent. Council will determine application of Green Star on a project-by-project basis, and whether to achieve formal certification. In general, all projects except iconic, high profile or high budget (e.g. $30m+) projects will not need certification.

Table 1. Projects and maintenance of Council buildings that should aspire to comply with the Council Guidelines and Green Star rating or equivalent.

Building Projects & Maintenance	Definition	Project Example	Applicable Performance Tool
Major New Project (≥$10M+)	New major building works with a total design and construction value of ≥$10M	New leisure centre Complete reconstruction of a major Council building Community centre rebuild	5 Star Green Star rating or equivalent* OR Sustainability Guidelines for Council Buildings
Minor New (<$10M)	New minor building works with a total design and construction value of <$10M	New sports pavilion New public toilet New storage shed	Sustainability Guidelines for Council Buildings
Major Upgrade (>$5M)	A major upgrade to an existing building with a total design and construction value of >$5M	Upgrade or expansion of a major Council building	For Upgrades ≥$10M: 5 Star Green Star rating or equivalent* OR Sustainability Guidelines for Council Buildings For Upgrades <$10M: Sustainability Guidelines for Council Buildings
Significant Upgrade ($200K-$5M)	$200,000 to $5M	Refurbishment, renewal, upgrade or expansion of a community centre	Sustainability Guidelines for Council Buildings
Minor Upgrade and Renewal (<$200K)	Partial retrofit of existing plant or building construction of <$200,000	Replacement of a roof or equipment	Sustainability Guidelines for Council Buildings
Preventative and Servicing Maintenance	Regular equipment checks and servicing by Council maintenance staff and contractors	Heating and cooling systems are regularly checked for performance	Sustainability Guidelines for Council Buildings – PART THREE
Corrective maintenance	Repair or replacement of building components or equipment	Either a fault is reported by occupants, or contractors identify it during a regular check-up	Sustainability Guidelines for Council Buildings – PARTS TWO & THREE

**A 5 star Green Star or equivalent uncertified rating will generally be the target for all projects except iconic, high profile or high budget (e.g. $30m+) where a 6 star certified rating may be the target. Council will determine this on a project by project basis, noting that not all development types are eligible to use Green Star Buildings program such as standalone carparks (National Construction Code Class 7a) and uninhabited structures (Class 10).*

2.2 Are all specifications relevant to all project types?

Not all specifications will be relevant to every project: It is recognised that certain projects may not involve all sections of the Council Guidelines. I.e. a lighting design project would only need to refer to the Lighting Council Guidelines Section. Council tenders and requests for quotes will clearly outline what sections are relevant to each project.

Certain facility types including car parks, aquatic centres and public amenities require their own unique specifications. Separate sections have been made for them accordingly.

The Guidelines apply to all Council-owned buildings including those managed by external parties. For Council-owned buildings where tenants have responsibility for fit-out work of the leased areas (lights, materials, etc) then the Guidelines apply to the base building only. Council also prefer that tenants strive to adhere to the Guidelines for the leased premises wherever possible however this will be at the tenant's discretion.

Council acknowledge that there are particular circumstances where the specifications may not be achievable or practically possible to reach: This might be the case for heritage buildings.

At times, specifications that are suitable for a large building or project may not be suitable for a small building or project: Each specification has been worded to ensure it is clear when it is relevant. In addition to this, it is Council's responsibility when writing the tender, request for quote or job order, to clarify which specifications are relevant and/or irrelevant.

2.3 Implementation Reporting Methods

Implementation reporting methods vary depending on the project scale and type. Council will check for implementation of the Guidelines at the tender/quote, design, construction and commissioning phases in consultation with internal (and external where engaged) environmental advisers**.**

The design consultants must strive to achieve all relevant specifications within the Council Guidelines (and Green Star where relevant) and report on their compliance using the Sustainable Building Guidelines Report[2].

The construction contractors must in turn strive to achieve all relevant specifications embedded in the design by ensuring they are included in working drawings and project specifications. They must also take photographic evidence of certain elements for compliance purposes and facilitate relevant compliance visits.

[2] The Sustainability Guidelines Report is an Excel document where contractors provide an index to building plans, reports and relevant Section J calculator reports that demonstrate compliance with the Sustainability Guidelines for Council Buildings.

2.3.1 Implementation Roles and Reporting Processes for New Building and Upgrade Projects

Table 2 outlines stakeholder responsibilities during a building project.

Table 2. Project Responsibilities

Who	Responsibilities
Council Project Manager	The Council Project Manager, or their delegate is responsible for verifying implementation of the Council Guidelines will: • Identify which specifications within the Council Guidelines are applicable to the project by adjusting the Sustainable Building Guidelines Reporting Tool (Reporting Tool) • Ensure correlation between project responsibilities and Council's project management framework and visa versa • Identify whether Green Star or equivalent is required, what level of star rating and whether to achieve accreditation. • Identify whether to conduct a Lifecycle Costing for certain specification categories to understand full financial implications of each category and respective payback period • Ensure information on the Council Guidelines (including the customised Reporting Tool) is included in the design and construct request for tenders and contract documentation • Check for compliance with the Council Guidelines at different stages of the project
Sustainability staff	Sustainability staff will assist the Council project manager throughout the project as required.
Design consultant	The external design consultant / architect is responsible for ensuring compliance with the Council Guidelines throughout the project. This includes submitting the Reporting Tool and accompanying documentation during the design phase.
Construction contractor	The external contractor must ensure the Council project manager is informed of all site inspection check points ahead of time and must demonstrate compliance with all relevant specifications in the Council Guidelines by submitting a completed Reporting Tool and accompanying documents to the Council project manager prior to practical completion of project. In addition, if the construction drawings or building equipment deviate from the original design and original construction plan, the construction contractors must notify the project manager and confirm ongoing compliance with the Council Guidelines.

Figure 1 and the notes below document a compliance process including key hold points for standard major and minor new building and upgrade projects. Note that minor building upgrades won't involve as many stages. The design consultant and/or building contractor should refer to the tender or quote documentation for any amendments to the process outlined below.

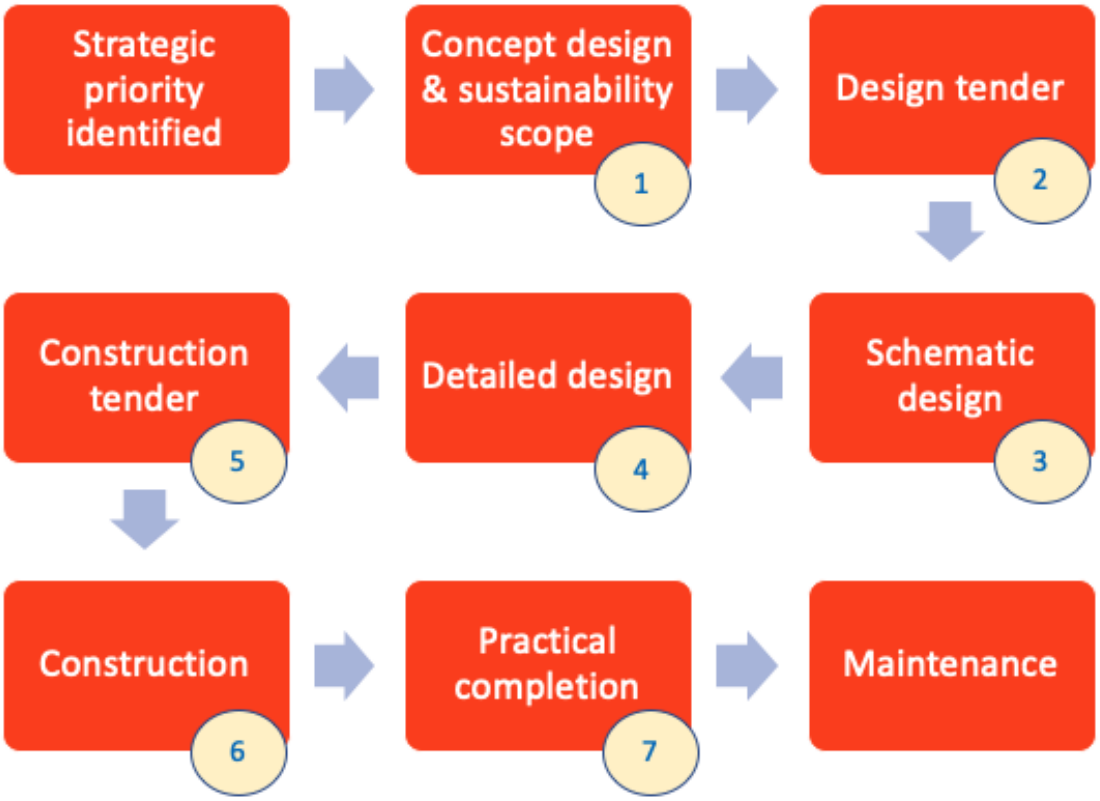


Figure 1. Compliance process and key hold points for standard major and minor new building and upgrade projects

1

1. The **Council project manager, with support from sustainability staff,** outlines which Council Guidelines specifications are applicable to the project by completing the Sustainable Building Guidelines Reporting Tool applicability column. The **Council project manager** identifies whether the following are also required: Green Star rating or equivalent (and if so what star target and whether it requires formal certification); life cycle costing for various building components to achieve the selected specifications; an air leakage test or infrared test before practical completion of the project. *This should then be reflected in the project scope, deliverables, milestones and budget.*

2

2. The **Council project manager** includes information on the Council Guidelines and Council Sustainable Buildings Policy, including attaching both the Council Guidelines *and* the Sustainable Building Guidelines Reporting Tool and implementation reporting requirements[3] in the design request for quote/tender/order of works. This is to enable design contractors to understand and incorporate all relevant sustainability specifications into their response.

The **Council project manager** then ensures the relevant sustainability scope (Council Guidelines, customised Reporting Tool, any Green Star or equivalent requirements, Implementation reporting requirements, air leakage or infrared test) is incorporated into the design contract documentation.

[3] Template text has been provided in the Staff Manual for the Sustainability Building Guidelines for Council Buildings. For small or unusual projects, the compliance process may need to be altered to suit project needs.

3. The **Council project manager** and **design consultant** meet to verify that the Schematic Designs reflects compliance with the Council Guidelines (no Reporting Tool required at this stage) and to confirm the upcoming Council Guidelines implementation reporting process for the Detailed Design phase (i.e. the completion of the Reporting Tool, and if relevant, the Green Star compliance process).

4. The **Council project manager reviews compliance** with the Council Guidelines on completion of the design phase.

Design consultants submit proof of compliance with the Council Guidelines as part of Council's planning approval process (either a Development Application or a Review of Environmental Factors process) by submitting the customised Sustainable Building Guidelines Reporting Tool to the **Council project manager**. An outline of the indoor lighting's power density must be included, and if required by Council's standard planning approval process, (i.e. if it is a new building project or there are major alterations to the building fabric), a National Construction Code Section J Building Façade Calculator report must also be included. Any applicable specifications not included in the designs need to have documentation outlining why.

The **Council project manager** signs off on compliance with the design phase in the Reporting Tool.

5. The **Council project manager** ensures the Reporting Tool and accompanying documentation submitted by the **design consultant** are provided to the **building contractor** during the construction tender phase. This should document all applicable specifications.

The **Council project manager** ensures the relevant sustainability scope (Council Guidelines, customised Reporting Tool, any Green Star or equivalent requirements, implementation reporting requirements, air leakage or infrared test) are incorporated into the construction contract documentation.

At the awarding of a construction contract, the **construction contractor** takes ownership of the Reporting Tool. No reports are required at this stage unless the construction drawings or planned building equipment deviate from the design. If this occurs then the **construction contractor** must submit an updated Reporting Tool highlighting changes and continued compliance with the Council Guidelines. If lighting design changes then the indoor lamp power density needs to be included in the updated Reporting Tool. And if the building envelope design changes, then an NCC Section J Building Façade Calculator report must also be submitted. This is to be verified by the **Council project manager**.

6. During construction, the **construction contractor** collates relevant photos and documents that must be submitted at the commissioning phase. The **Council project manager** visits the site a) just before the insulation is installed to verify the building envelope is appropriately sealed and b) just before the building is plastered to verify the insulation has no gaps. The **construction contractor** will be responsible for facilitating these site visits.

7. The **construction contractor** submits a completed Reporting Tool along with packaging/product photos and/or documents that outline: ceiling, wall and floor insulation make and model numbers and R-Value; window make and model numbers, R-Value and Solar Heat Gain Coefficients or other kinds of certifications (Australian Window Association Certificate of Compliance); construction

and/or demolition waste diversion and landfill receipts; photos of chimneys and flues to prove damper or flap; photos of exhaust fan joins and evidence of self-closing dampers/filters or the like.

The **construction contractor** facilitates a visit from the **Council project manager** to check for air tightness, and general commissioning sign off**.** If an air blower or infrared test is part of the contract (determined by Council at the concept design phase), the **construction contractor** facilitates this and the **Council project manager** signs off on it. Council will require this on a case by case basis to ensure that the building envelope is sealed at an air leakage permeance rate of not more than 10 m3/hr.m2 at 50 Pa reference pressure when tested in accordance with ATTMA TSL2 Non-Dwellings – October 2010 standard (http://www.attma.org/). This ensures compliance with the specifications found in Section 4.

The **Council project manager** signs off on implementation of the Council Guidelines by reviewing the Reporting Tool and supporting documentation prior to practical completion of project.

2.3.2 Equipment Renewals Implementation Reporting Process

This process is relevant to any equipment upgrades that occur in Council's existing buildings using maintenance contractors or other external contractors. The contractor will at all times co-operate with Council staff or independent contractors to collect information to understand project compliance levels to this specification.

Table 3. Implementation reporting process for equipment renewals

Project Stage	Contractor Tasks	Council Project Manager Tasks
Quotes/Tenders	Within the quotes/tender, provide: • Sustainability capability and experience. • Commitment to the Council Guidelines and compliance process • A completed Sustainable Building Guidelines Reporting Tool demonstrating compliance • If the installation involves a lighting redesign, then also submit the designed indoor lighting power density	• Include the Council Guidelines and the Sustainable Building Guidelines Reporting Tool that clarifies applicable specifications in the quote/tender brief. • Review proposals.
Pre-Installation	• If the equipment changes from original proposal, submit an updated Sustainable Building Guidelines Reporting Tool with supporting documentation (e.g. product specification sheet) **before the equipment is sourced.** (Should the change be minor, check with Council project manager to confirm if an email instead of a full Sustainable Building Guidelines Reporting Tool will suffice.)	• Review project changes to ensure continued compliance with the Council Guidelines.
Commissioning	• Handover documentation (product manuals, product invoices, as-built drawings).	• Verify and sign off on compliance with the Council Guidelines.

2.3.3 Maintenance Contracts

All maintenance contractors will be issued with the Sustainability Guidelines for Council Buildings along with a letter/email outlining which sections of the Council Guidelines are relevant to their contract.

As maintenance contracts come up for renewal, relevant sections of the Sustainability Guidelines for Council Buildings will be referred to in the body of the contract, and the entire Council Guidelines will be supplied as an attachment.

It is the responsibility of the contractor and the relevant Council project manager to ensure ongoing compliance with the Council Guidelines.

2.3.4 Implementation Reports in More Detail

Sustainable Building Guidelines Report
The Sustainable Building Guidelines Report is a Council supplied Excel document that – in most instances – is where contractors provide **an index** to building plans, reports and relevant Section J calculator reports that demonstrate compliance with the Council Guidelines. It has been created to enable contractors to easily communicate compliance with the Council Guidelines and assist the Council project manager to verify compliance.

NCC Facade Calculator Report
The NCC Façade Calculator Report enables compliance with the building fabric and glazing specifications in Section 4 to be verified. The calculator can be downloaded from the Australian Building Codes Board website. They also provide online tutorials in using the calculator (www.abcb.gov.au).

Lighting illumination density
The consultant can choose how to calculate and report lighting illumination density. One method is to download the NCC Lighting Calculator from the Australian Building Codes Board website. They also provide online tutorials in using the calculator (www.abcb.gov.au).

NCC Section J Report
Section J reports will also be required for any building project that requires a development approval (DA). This will be in addition to the Council Guidelines implementation reporting requirements.

Construction Photos and Documents

The construction contractors are responsible for collecting construction photos and documents and submitting them to Council during the construction phase.

Relevant product packaging photos and/or documents include:

- Ceiling, wall and floor insulation packaging outlining make and model numbers, and R-Value
- Window product packaging outlining make and model numbers, and R-Value and Solar Heat Gain Coefficients or other kinds of certifications (Australian Window Association Certificate of Compliance)
- Construction and/or demolition waste diversion and landfill receipts

Installation photos:

- Chimneys and flues to prove damper or flap

- Exhaust fan joins and evidence of self-closing damper / filter or the like

Air leakage testing and infrared testing
Council will require this on a case by case basis to ensure that the building *envelope* is sealed at an air leakage permeance rate of not more than 10 m3/hr.m2 at 50 Pa reference pressure when tested in accordance with ATTMA TSL2 Non-Dwellings – October 2010 standard (http://www.attma.org/). This ensures compliance with the specifications found in Section 4.

PART TWO: NEW BUILDINGS, UPGRADES AND EQUIPMENT RENEWALS

3. Management of Design, Construction and Commissioning

Note: Not all specifications listed in this section will apply to every project. Refer to the Sustainability Guidelines Report to determine which specifications apply.

Element	Specifications
3.1 All Stages of the Project	1. Aim to adhere to the Implementation Reporting Requirements**Error! Reference source not found.** outlined in Section 2. 2. Projects ≥$10 million to strive to achive a 5 Stars minimum Green Star or equivalent rating OR the Council Guidelines. Certification is not required except for high profile or budget (~$30m+) projects. Council will decide on this on a project-by-project basis.
3.2 Design Phase	1. Projects ≥$10M to implement an Operational Waste Management Plan (OWMP) for the project which is to be reflected in the building design. (Refer Credit 8: Operational Waste for guiding principles). 2. Major plant equipment design to have input from the Property Assets staff around the service and maintainability of the building and equipment.
3.3 Construction and/or Demolition Waste	1. 80% minimum of construction and demolition waste by weight to be diverted from landfill, noting that projects ≥$10M complying with Green Star may have to go beyond this (Refer Green Star Credit 22B: Construction and Demolition Waste - Percentage Benchmark). 2. Asbestos Standard Operating Procedures (SOPS) Dec 2019 must be followed where asbestos is suspected, identified or accidentally disturbed.
3.4 Construction Management Plan	1. Project to implement a project-specific Environmental Management Plan (Refer Green Star Credit 7.0: Construction Environmental Management - Environmental Management Plan). 2. Projects ≥$10 million to implement a Construction Indoor Air Quality (IAQ) Plan during construction and pre-occupancy phases. The plan to meet or exceed the control measures of the Sheet Metal and Air Conditioning Contractors National Association IAQ Guidelines for Occupied Buildings under Construction, 2008. (Refer Green Star Credit 9.1.3: Indoor Air Quality - Ventilation System Attributes - Cleaning Prior to Use and Occupation.) 3. Projects ≥$10M to illustrate the promotion and management of sustainable educational practices and positive culture, mental, physical health practices to site workers and contractors. 4. For developments involving excavation or that are likely to pose a significant environmental risk, develop an Erosion and Sediment Control Plan as per Part B, S.17 of the DCP (2013). 5. Develop a Stormwater Management Plan in accordance with Part B, S.18 of the DCP (2013).
3.5 Commissioning	1. All building systems to be commissioned in accordance with Chartered Institution of Building Services Engineers or American Society of Heating, Refrigerating and Air-Conditioning Engineers codes. 2. Specific commissioning specifications are outlined for various areas in the following sections: Solar Panel Commissioning; Hot Water System Commissioning; HVAC Commissioning ; Commissioning of Sub-Meter Systems for water and electricity.

3. Council Property Assets to be involved in the development of a service and maintainability review procedure for major plant equipment with. (Refer Green Star Credit 2.1: Commissioning and Tuning - Services and Maintainability Review).
4. Operational & maintenance manuals, building user guide and training to occupants, as built drawings for all services and a log book to be provided. These are to include system descriptions, and guidance on operating procedures and maintenance requirements.
5. For projects ≥$10M, consider employing Independent Commissioning Agent to check compliance with the Council Guidelines. The agent will be organised and funded by Council, but relevant checks must be facilitated by the contractor. (Refer Green Star Credit 2.4: Independent Commissioning Agent).
6. Contractors to provide 12 months defect liability period and warranty of all mechanical services systems. This includes quarterly building tuning for at least 12 months following practical completion. (Refer Green Star Credit 2.3: Commissioning and Tuning - Building Systems Tuning).
7. It is preferred that the main contractor has ISO14001 accreditation.

4. Building Design

Exceptions: Council recognises that the ability for certain upgrade projects to comply with façade specifications may be limited by the building's existing characteristics (e.g. heritage buildings). Applications for leeway can be made in such circumstances.

Element	Specifications
4.1 Entire Building	1. Design to minimise embodied energy, carbon and operational costs. In relation to materials, suggested starting points include recycled materials, mass timber construction, such as CLT, plywood, corrugated steel, magnesium board, instead of concrete and masonry based systems. 2. Design to align with objectives in Section 1.3 and heating, ventilation and air conditioning (HVAC) design specifications in Section 11.1. 3. Design to adapt to key climate change impacts (e.g. flooding risk, increased storm intensity, heat waves and Urban Heat Island Effect, decreased rainfall, sea level change and increased frequency of high fire danger weather). 4. Insulation to have zero Ozone Depletion Potential (ODP) in processing and manufacturing. 5. Design to have waste separation/recycling for building users and suitable storage loading bays and public place recycling bins outside the building in areas of high public use. And compost bins or worm farms wherever appropriate. 6. Design to include regularly occupied areas so the internal ambient noise levels and reverberation are suitable and relevant to each area's activity type (refer Green Star Credit 10.1: Acoustic Comfort - Internal Noise Levels and Credit 10.2: Acoustic Comfort - Reverberation). 7. Design to include a high quality general amenity area and/or breakout space intended for regular occupants that meet at least three of the specified criteria for; interaction, ventilation, daylight, views, landscaping and noise (refer Green Star Interiors Credit 14B: Quality of Amenities - Amenity Space Prescriptive Pathway). 8. At least 60% of floor area used for permanent work spaces (excluding meeting rooms) to be within 8m of an external window that provides an unobstructed view unless otherwise specified by Council. 9. Doors, windows and fittings to be designed to standard dimensions (e.g. standard door heights). 10. A plaque to be installed with information on sustainable building features (template available from Council).
4.2 Building Fabric[4]	1. For projects ≥$10 million, Council accept compliance with an NCC Performance Solution for building envelope – instead of complying with the NCC Deemed-to-Satisfy provisions referred to in these specifications – so long as a 10% improvement on NCC levels is achieved. 2. As a minimum comply with DCP S.3.5.3 Provisions P1-P3 regarding Thermal Mass. 3. As a minimum, wall-glazing, roof, ceiling and floors in new buildings, extensions or renovations must comply with the Deemed-to-Satisfy provisions outlined in the latest NCC (eg: Section J1 of NCC, 2019).

[4] Fabric means the parts of a building's fabric that separate a conditioned space or habitable room from: the exterior of the building; or a non-conditioned space such as the floor of a rooftop plant room, lift-machine room, the floor above a car park or warehouse or the common wall with a car park, warehouse or the like.

4.3 Roof and Ceiling	1. Roofs to be designed to generate maximum solar electricity and facilitate the simple installation of solar PV panels, directly to roofing, and without the use of ballast. Consult with solar installers to seek clarification on purlin spacing to optimise / minimise racking. 2. Roofing materials to be no darker than the BASIX solar absorptance classification of 'Light' (L<0.475), except if heritage and DCP conditions dictate otherwise. 3. Both bulk insulation over the ceiling AND reflective insulation under the roofing materials to be installed, or rigid high-performance insulation where both are not feasible. 4. Recessed light fittings to be avoided wherever possible. Should they be required as part of the design, then ensure that the latest NCC is complied with (eg: NCC 2019 Volume 1, Section J.1.4 Roof lights, pp.358). 5. Comply with the Green Roofs provisions of the DCP (2013, Part B, S.2.6.11.) 6. Ceiling heights to be a minimum of 2.7 metres to enable safe operation of ceiling fans.
4.4 Daylight and Shading	1. Passive solar design principles outlined in DCP S.1.6.2 must be adhered to as a minimum, noting the following: • Direct sunlight into windows should be minimised to limit glare or overheating. • Utilise a combination of external & internal shade control & internal • Plans must demonstrate how passive solar design has been considered • Provide shading diagrams indicating shade of surrounding buildings & landscape features for each season. 2. Highly reflective ground surfaces are not used externally, or are to be fully shaded from high angle sun.
4.5 Building Ventilation and Sealing	3. Building fabric to be designed to breathe and release water vapour to reduce the risk of condensation problems within the building fabric or interior of the building and as a minimum must comply with DCP Section 1.6.4 Natural ventilation. 4. The building to be airtight to prevent air leakage and must be sealed in compliance with the latest NCC (eg: NCC 2019 Vol 1, Part J3 Building Sealing). 5. The building detailing and construction to be capable of achieving a building air tightness test result of less than 5 m3/hr/m2 @ 50 Pa. Should Council deem an air blower test is necessary, Council will organise and fund the test and the contractor will facilitate the scheduling of it. The air tightness testing will be carried out in accordance with ATTMA TSL2 Non-Dwellings – October 2010 standard (http://www.attma.org/) or equivalent. 6. 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.
4.6 Other	1. The community to be consulted during project inception and/or design stage and feedback to be incorporated into the development or design brief. A formal response to all comments raised during the consultation phase to be provided. 2. Buildings to be designed that can easily be adapted to other uses, e.g. reduce the amount of structural partitions. 3. Exposed floors, walls and ceilings to be designed to reduce materials use. 4. Reuse an existing building or structure where possible. 5. Incorporate connection(s) with the natural environment in the design where possible. 6. Restore or improve the ecological value of the project site compared to pre-development stage where possible.

5. Smart Systems Metering

Element	Specifications
5.1 Sub-Metering	1. New electricity meters to be capable of individually recording the electricity consumption of nominated main services so that they can then – either now or at a future date – be incorporated into SMART enabled monitoring and control systems. This includes the following services: • Solar power • Air-conditioning plant (and its subcomponents) • Artificial light • Power supply to appliances • Hot water supply • Internal transport devices such as lifts and escalators but only if the building has more than one system serving it; and • Other ancillary plant. 2. For buildings over 1,500m^2, the following items are to be set up with a monitoring system that includes an online viewing platform, alarms for overly-high consumption or failures, automatic performance reporting, and recording of historical data to monitor and track performance over time: • Solar panel systems (refer to Section 6 for monitoring needs) • Air-conditioning plant (and its subcomponents) • Chiller • Hot water supply • Internal transport devices such as lifts and escalators but only if the building has more than one system serving it • Other ancillary plant • Swimming pool water supply to be submetered to mains, individual pool branch lines, domestic hot water and major equipment items as a minimum. • Irrigation water supply for playing fields or other areas requiring regular and large amounts of irrigation (refer to Section 15.2 for irrigation needs) • Monitoring systems must be integrated into any existing Council monitoring systems as advised by Council.
5.2 Commissioning of Sub-Meter System	1. If any sub-meter system is present (either new or existing that the project has altered) it is to be commissioned to test alert settings, automatic report generation and storing of historical data. 2. Training is to be provided to relevant Council staff on the use of the system.

6. Renewable Energy

Note: This is for new building, as well as major and significant upgrades (not for minor upgrades)

Element	Specifications
6.1 Solar Panels	1. From 2021, high efficiency solar panels of minimum of 20.5% efficiency to be used based on irradiance of 1000 w/m2. 2. Solar panels to cater for at least 30% of total peak electricity demand through the use of solar panels and heat pump technology. 3. Roof-mounted solar infrastructure to be safe and accessible for service/cleaning as required. 4. Design and install to be in accordance with Clean Energy Council guidelines and AS/NZS 5033 as well as all other relevant regulatory codes and standards. 5. Remote monitoring to be established that is consistent with the existing monitoring systems as advised by Council.
6.2 Solar batteries	1. Consideration should be given to install batteries with solar PV system in new buildings. Should Council prefer to decide on batteries for these facilities at a later date, then the building to be designed to provide adequate space to house any future battery system, and the solar system to be designed in such a way so as to allow for the addition of energy storage through connection of the devices to the inverter and not require any existing wiring to be modified.
6.3 Solar Panel Commissioning	1. Independent verification – appointed and funded by Council but facilitated by the contractor – will be considered for large solar panel sites (of over 200kW). 2. A maintenance plan is to be provided to Council with recommended maintenance requirements, clearly stating instructions to complete the task and the frequency of which the tasks should be completed. 3. An ongoing maintenance log shall be provided and recorded within the supplied manual for the PV installation with associated paperwork provided to the Council. Council will nominate an appropriate location to have the maintenance manual fixed by the Contractor in an appropriate pouch or enclosure within proximity of the PV system.
6.4 Renewable Energy Purchasing and Sharing	1. Purchase of 100% Renewable electricity. 2. Investigate energy sharing opportunities between neighbouring Council buildings.

7. Sustainable Transport and Car Parks

Element	Specifications
7.1 Electric Vehicle Future Proofing	1. Dedicated parking to be provided as well as associated charging infrastructure for electric vehicles commensurate to the size of the project. Where possible, the charging stations to be located to enable usage from multiple car parks. The number of charging stations to be equal or greater than 5% of new car park spaces. And sufficient underfloor conduits and other infrastructure in relevant areas to be allowed to increase charging provision in the future. 2. Refer to **Section Error! Reference source not found.8.2** for more car park specifications.
7.2 Building Entrance Signage	1. Clear pedestrian routes to nearest public transport facilities to be provided along with a map displayed near the building entrance showing access to and key details of nearby public transport.
7.3 Bicycle Facilities	1. 1 bike rack to be provided for visitors per 20 peak visitors near the entrance, and the following cyclist facilities for regular occupants. • secure bike parking for 10% of regular occupants. • at least 1.2 lockers per bike park space • change rooms and showers to meet demand, e.g. - 1 to 6 bike spaces: 1-2 showers - 6 to 12 bike spaces: 4 showers - 2 further showers per 10 additional bike park spaces 2. Continuous and accessible travel to be provided to the bike parking area. If bike parking area is external, access between building and bike parking should be protected from weather. 3. On-site bike paths to be integrated with existing public cycling infrastructure. 4. Power outlets to be provided to charge electric bicycles.
7.3.1 Car park Lighting and Controls (indoor and outdoor)	1. Design car park Lux levels according to meet and not exceed by more than 20% the Australian Standards (AS 1680.2.1:2008 and AS 1158.3.1:2020. 2. LED type car park lighting to have a minimum luminous efficacy of 95 lumens/Watt. 3. New lights to be smart lighting compatible to enable Council to adopt smart lighting features in the future. This includes lights that include a 7-pin NEMA base wired as per the requirements of ANSI C136.41-2013 to a variable output control gear (for dimming/brightening). A bridging plug to be used to allow for motion sensor / central PE cell / timer switches to operate as normal until Council seeks to activate smart lighting features. 4. Car park lighting to have a motion sensor which is part of the light fitting (outdoor car park lighting to also be activated and deactivated by a PE cell). Set light to dim after a time delay when no motion is detected. Once motion is detected the lights will resume to 100%. Sensor light settings shall be discussed with Council's Property Asset Manager. Motion sensors to adhere to AS/NZS 62301 (standby power of less than 0.25W). PE cell to have a life span of 40,000 hours of operation minimum, battery backup. 5. For indoor car park areas that receive a large amount of ambient natural lighting or are located outdoors, car park lighting controls to also have a PE cell with a good stability of switching threshold to turn artificial lights off when there is adequate natural light

	provided. PE cell must have a life span of 40,000 hours of operation minimum, battery backup. 6. Council would consider solar powered car park lighting and car park solar shelters should it be cost effective (e.g. a 5 year simple payback or less and an appealing net present value) that includes the future replacement costs of any batteries. 7. Auto-off-Manual Bypass switch to be installed to allow testing of lighting. 8. Operating procedure instructions to be provided 9. Wiring to be concealed or protected 10. Comply with specifications in the following sections for lighting: • Indoor and Outdoor Technology • Outdoor illumination • Indoor Lamp Power Density
7.3.2 Other Car Park Specifications	1. Comply with other relevant sections including the following: • Instructions and Implementation Reporting Requirements (Section 2) • Management of Design, Construction and Commissioning (Section 3) • Building Design (Section 4) • Smart Systems Metering (Section 5) • Renewable Energy (Section 6) • Materials (Section 10) • Water Tanks (Section 14) • Water Management (Section 15) • Ecology (Section 16)

8. Hot Water Systems

Note: This is for new buildings, upgrades and equipment renewals

Element	Specifications
8.1 Hot Water System Technology	1. Preference for high efficiency electric hot water heat pumps. An exception to this is for spaces with infrequent/low-flow hot water use where instantaneous electric systems are to be used. 2. Drinking water to be separated from domestic hot water system. 3. Gas hot water systems are not to be specified. 4. Provision of hot water in bathroom hand washing sinks to be decided by Council on a case-by-case. 5. Pipe lengths to be minimised to limit waste.
8.2 Pipe Insulation	1. All flow & return hot water piping to be insulated with pre-formed sectional glass wool or polyester insulation in accordance with the latest NCC (eg: 2019 J5.2). All exposed pipework insulation to be sheathed with 0.5mm thick zinc anneal sheet metal or approved equivalent (no gaps). *Pre-lagged (Kemlag or Polylag) pipe and PEX (or crosslinked polyethylene) hot water pipe are **not** considered to be insulated and are not to be used for pipes above 50mm outside diameter (OD).* 2. All pipework insulation that is exposed to outdoors to be sheathed in UV protective and water resistant coating, i.e. foil tape or equivalent coating.
8.3 Ring main Hot Water System	1. Ring main hot water systems to include a digital time clock control mechanism that • 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 meet health requirements.
8.4 Heat Pump Systems	1. Heat pumps which contain hydrofluorocarbon (HFC) refrigerants should be avoided where alternative technologies are readily available. 2. Heat pump technology to have minimum warranty periods of 10 years for tanks and 6 years for heat pump component, and a maximum decibel rating of 50. 3. Commercial systems to have a Coefficiency of Performance >4 and domestic systems must have a CoP of >5. 4. Heat pump compressor units to be installed in well ventilated areas.
8.5 Instantaneous Electric Systems	1. Product to be a Stiebel Eltron Instantaneous Water Heaters (single-phase and three-phase) and Stiebel Eltron Open Vented Compact Storage Water Heater[5] or approved equivalent.
8.6 Boiling Water Units	1. Unit to have auto shut-off and sleep mode and be set up to switch off when the site is closed and start heating water an hour prior to building occupancy. Contractor to program operation hours to suit intended use – in accordance with Council advice.

[5] The storage heater is not instantaneous however it is still energy efficient and is appropriate for sites with constant but low hot water usage needs.

8.7 Hot Water System Commissioning

1. Provide operating, product and maintenance manuals and “as-built” drawings where applicable. For heat pump arrays and ring mains, the drawing should be in the form of a single line diagram.
2. If it’s a retrofit situation and a wiring circuit is installed, certificate of electrical safety and a certificate of plumbing compliance to be provided.
3. Details of recommended maintenance schedule and activities to be submitted.

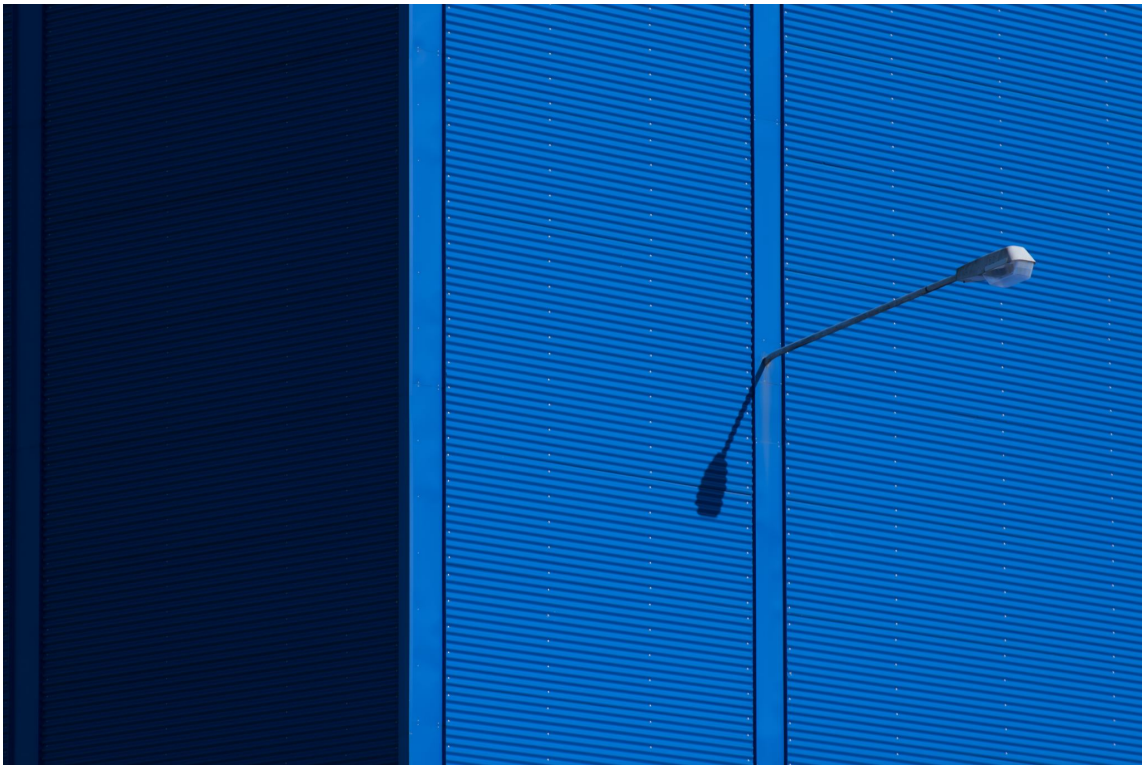
9. Lighting

Topic	Specifications
9.1 Indoor and Outdoor Technology	1. All luminaires for new lighting to be LED. 2. All lighting to incorporate smart controls where appropriate to suit the application. 3. Fixtures and fittings to be available from a local or Australian distributor. Council may consider a variation from this on a case by case basis.
9.2 Indoor Lamp Power Density	1. Maximum lamp power density or illumination of power of artificial indoor lighting must comply with the latest NCC (eg: NCC 2019 Vol 1, Part J6 Artificial Lighting Power). Exceptions**:** For building projects ≥$10 million, Green Star may require a higher level of lamp power density or illumination of power.
9.3 Indoor Lighting Illumination	1. For all indoor task lighting (of any type) a colour temperature of 4000K is recommended. 3000K or 5000K may be used in some circumstances with approval from the Council Project Manager. 2. Lighting to have minimum colour rendering index (CRI) of 80. 3. Design Lux levels according to meet and **not exceed by more than 20%** the Australian/New Zealand Standards for Interior and Workplace Lighting (AS/NZS 1680.2:2008). 4. Optimise natural light access to reduce the amount of energy used to run artificial lighting (limiting the internal depth of the building allows efficient use of natural light). (DCP, S.2.6.2 & S.3.5.2 – Passive Solar Design) 5. For offices: Ceiling area to have an average surface illuminance of at least 30% of the lighting levels on the working plane and an average surface reflectance for ceilings of at least 0.75 (corresponds to matte flat white ceiling). Refer Green Star Credit 10.2: Lighting Comfort - Surface Illuminance. The illuminance values for ceilings, walls, and floors must be calculated in accordance with AS/NZS 1680.1:2006 Appendix B. 6. Light interior surfaces and external/internal light shelves to be used to facilitate diffuse light penetration into space. 7. All bare light sources to be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including looking directly upwards. Refer Green Star Credit 11.1.2: Lighting Comfort - Glare Reduction (Option 11.1.2A). 8. All fittings to be adequately ventilated and all components to be easily accessible. Diffusers to be easily removable. 9. Upward light spill ratios inside a building should be low (i.e. no deflected or uplighting unless otherwise specified).
9.4 Outdoor illumination	1. Design Lux levels according to meet and **not exceed by more than 20%** Australian Standards. 2. Light fittings to not spill light above the horizontal plane and be directed only to the area to be lit. 3. Outdoor areas to only use warm white light to limit damage to nocturnal wildlife (no more than 3000k).

	4. Comply with AS 4282 Control of the Obtrusive Effects of Outdoor Lighting and demonstrate that light pollution from outdoor lighting or lighting from internal sources is reduced. (Refer Green Star Credit 24: Light Pollution.)
9.5 Indoor Controls & Switching (excluding car parks & public amenities)	(Refer to Section **Error! Reference source not found.** for Council Guidelines on car park lighting controls) (Refer to Section 19.1 for Council Guidelines on public amenity lighting controls) 1. Local switching to individual areas for energy efficiency to be provided. 2. For indoor areas with regular use of 6 hours or more per day: Lights to be switched ON and OFF manually at the beginning and end of occupancy. A manual by-pass switch with a time delay function set for 1 hour to be provided so occupants can use lights out of hours. 3. Indoor areas with sporadic use (meeting room, storerooms, toilets) to have an ON/OFF switch combined with either a push button switch or a motion sensor. Passive infrared sensors (PIR or ultrasonic sensors) are accepted and are to be installed where there are clear lines of sight, facing the activity area of the room (rather than the entry where lights can be activated by people walking past the entry). 4. Ambient light sensors to reduce artificial lighting to be installed when there is ample natural lighting. Life of unit should be at least 10 yrs (or 40,000 hours operation).
9.6 Outdoor controls (excluding car parks and public amenities)	1. All outdoor lighting excluding car parks and public amenities to be: • Auto-off-Manual Bypass Selector style switch (not circuit breaker) to allow testing of lighting • Smart lighting compatible. To include a 7-pin NEMA base wired as per the requirements of ANSI C136.41-2013 to a variable output control gear (for dimming/brightening). A bridging plug to be used to allow for central PE cell and timer switches to operate as normal until Council activates smart lighting features. **All outdoor areas associated with a building, excluding car parks, public amenities and sports fields to be operated by a PE cell and timer to switch lights ON when dark and OFF when not needed. Find out from Council the desired hours of use (refer to** 2. Table 4 for setting preferences). • Photoelectric (PE) cell to have a life span of 40,000 hours of operation minimum, battery backup. Preferred product or equivalent: the CABAC weatherproof sunset switch. • Additionally, in some circumstances an override push button timer/time delay switch may be installed in case use is required after hours or use of a building is sporadic (that runs for 1 hour then automatically turns off).

Table 4: Council outdoor metered public lighting timer settings

Open Space Use	Timer Setting Preferences
Building security and entrance lighting	Operating hours only. Motion backup if area is prone to vandalism or intruders.
Car parks	Control car park lighting with a motion sensor which is part of the light fitting. Set light to dim after a time delay when no motion is detected. Once motion is detected the lights will resume to 100%. Sensor light settings shall be discussed with Council's Property Asset Manager.
Trees and building uplighting	None in proximity to bushland (land zoned E2 Environmental Conservation) None preferred elsewhere. If used, then switch off at 11pm or 12am and leave off all night.
BBQ and picnics shelters	Switch off at 9pm in winter and 10pm in summer

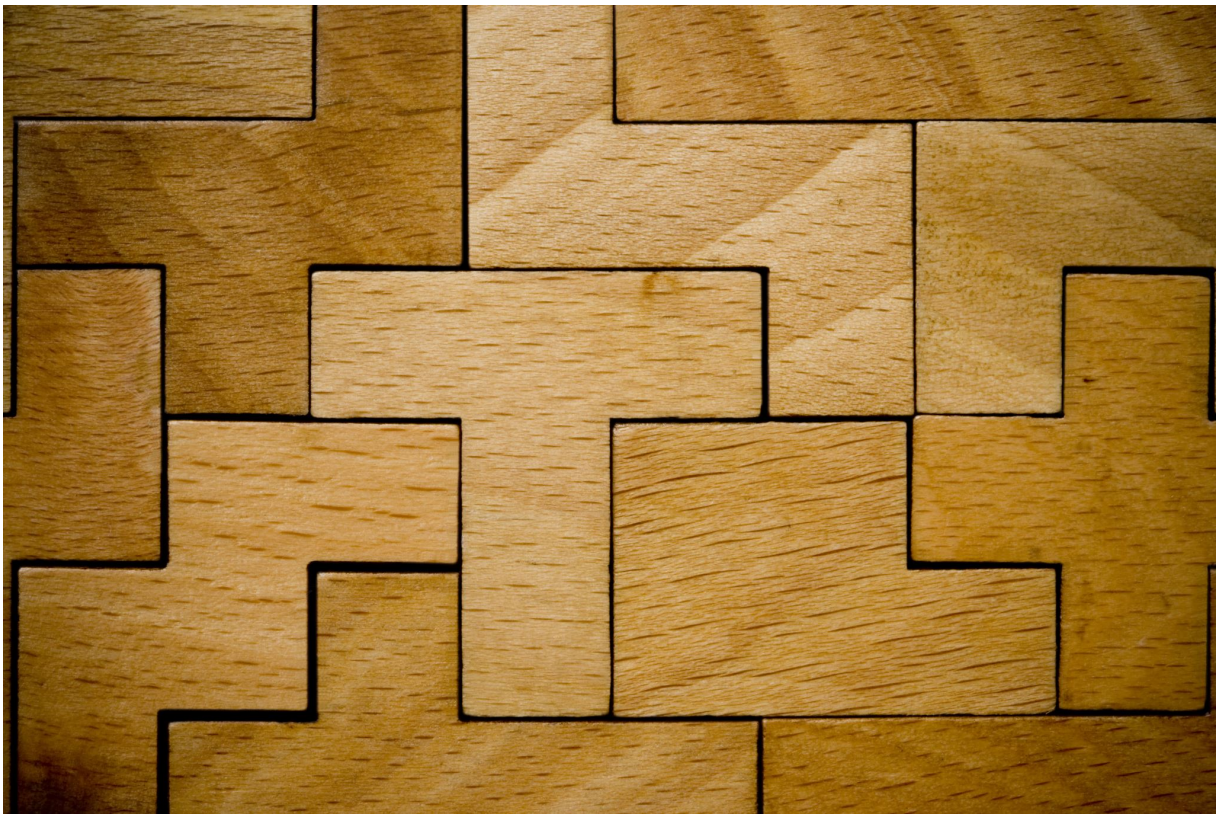


10. Materials

Element	Specifications
10.1 Concrete and Sand	1. Timber and Cross Laminated Timber (CLT) structure to be considered instead of concrete or steel. 2. Use of low carbon concrete is encouraged. 3. Use of reinforcement fibres (especially with high recycled content) instead of steel is encouraged. 4. 30% minimum cement replacement is preferred. Refer Green Star Credit 19B.1.1: Life Cycle Impacts - Concrete - Portland Cement Reduction. 5. 40% coarse aggregate substitution or 25% fine (sand) aggregate substitution is preferred. Refer Green Star Credit 19B.1.3: Life Cycle Impacts - Concrete - Aggregates Reduction. 6. Miix water for concrete used in the project from a captured or reclaimed source is preferred. Refer Green Star Credit 19B.1.2: Life Cycle Impacts - Concrete - Water Reduction. 7. Expanded polystyrene waffle pod slabs are not to be used. 8. Use recycled glass sand is preferred for all applications requiring more than five tonnes of sand to be used in pipe-bedding or under concrete slabs.
10.2 Steel	1. At least 95% of structural steel should be Australian or sourced from a responsible and accredited steel maker: a current member of the World Steel Association's Climate Action Programme holding a valid ISO 14001 Environmental Management Systems Certificate for the relevant manufacturing site is an example of how to prove this (Green Star Buildings guidelines. Refer Green Star Credit 20.1: Responsible Building Materials - Structural and Reinforcing Steel).
10.3 External Surface Finishes	1. 75% of the total project site area to comprise of building or landscaping elements that reduce the impact of heat island effect. This includes vegetation, green roofs, light roofing materials and hard-scape, water bodies and solar panels. Refer Green Star Credit 25: Heat Island Effect.
10.4 Timber (including engineered wood products and composite timber)	1. All timber for buildings and furniture fixtures to be sourced from sustainable sources and grown in Australia (or New Zealand in the case of Radiata or other plantation pine species). Exceptions relating to origin: • In the case of Radiata or other plantation pine species, New Zealand timber is also accepted, and Native Australian Cypress pine is not to be used (Calitirs species). • Mass-timber construction, such as CLT (cross-laminated timber). • Any special case with sufficient justification. 2. Preference to be given to recycled timbers where appropriate, such as decorative structural, flooring, panelling, furniture fixtures and landscaping. Recycled timbers can be re-milled to any dimensions from a range of suppliers including but not limited to: Australian Architectural Hardwoods; Northern Rivers Recycled Timber; Ironwood Australia; Timbers with Veins P/L. 3. All timbers to have Chain of Custody (CoC) certification through one of the following standards: Forest Stewardship Council; Programme for the Endorsement of Forest Certification; Australian Forestry Standard). 4. 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 Green Star Credit 13.2: Indoor Pollutants - Engineered Wood Products.

10.5 Poly Vinyl Chloride (PVC)	1. 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 PVC credit. 2. Pipes, conduits, cables, blinds and permanent formwork to be either PVC-free or PVC products that adhere to Best Practice Guidelines in Green Star Buildings Credit 20 Responsible Materials. 3. The ergonomics of all new furniture and equipment to be reviewed and considered appropriate to meet the needs of the users.
10.6 Internal Surfaces and Finishes	1. Low Volatile Organic Compound (VOC) office furnishings, flooring and internal coatings (i.e. paints, adhesives and sealants) to be used. Refer to Appendix 1 or Green Star Credit 13.2: Indoor Pollutants - Paints, Adhesives, Sealants and Carpets. 2. Plasterboard to have recycled content or third party certified plasterboard - Refer Green Star Credit 21: Sustainable Products - (B) Recycled Content Products and (D) Third-Party Certification for further detail. Consider Magnesium oxide (MgO) board / panel lining system for high durability/ low embodied energy. 3. Use raw and unfinished surfaces where appropriate.
10.7 Items to Avoid	1. Avoid fibrous floor, wall and ceiling finishes in inhabited areas, supply or return air. 2. Where suitable alternatives are available, avoid VOCs in engineered wood products such as LVL & LSL, I-Beams, glued laminated timber, plywood, in particular at child care centres. Use low or zero VOC adhesives or a ZERO VOC water-based sealer instead. 3. Avoid arsenic treated pine. Use light organic solvent preservative (LOSP) pine instead in combination with a termite barrier system. Clad internal walls. Arsenic treated pine not to be exposed to interiors. 4. Avoid materials that contain the following toxic substances: • Arsenic compounds • Benzene derivatives • Beryllium compounds • Chlorinated solvents • Chlorobenzenes • Cyanide compounds • Fluorides • Heavy metals - cadmium, mercury, lead, chromium • Other halogenated organic chemical compounds • Pesticides containing bioaccumulative &/or persistent toxic pollutants • Phthalate ester • Polycyclic aromatic hydrocarbon • Selenium compounds
10.8 Other	5. Maximise opportunities for the use of recycled materials and equipment. Wherever possible materials to be re-used, contain recycled content, or have a third party certification recognised by the GBCA. 6. Recycled glass sand to be used for all applications requiring more than five tonnes of sand to be used in pipe-bedding or under concrete slabs. 7. Preference to be given to durable materials (via manufacturers' warranties) that can be readily recycled at the end of their life cycle. Products/materials with Stewardship Programs. Refer Green Star Credit 21: Sustainable Products - (E) Stewardship Programs for further detail. 8. Products to have a product certification scheme recognised by the Green Building Council of Australia. 9. The total value of materials extracted, harvested or manufactured locally should beat least 10% of total project cost. 10. Environmentally innovative materials (e.g. geopolymers, rammed earth, natural paints) should be used.

10.9 Disposal of Material	1. All products containing toxic substances must be disposed of according to legislative requirements and best practice standards. Visit http://businessrecycling.com.au to determine available services and locations for the recycling or safe disposal of toxic substances. 2. Ensure any existing asbestos, PCBs or lead paints are removed by suitably qualified professionals.



11. Heating Ventilation and Air Conditioning (HVAC)

Note: This applies to new buildings, upgrades and equipment renewals

Element	Specifications
11.1 Design Criteria	1. For new buildings, the inhabited spaces to be designed with good natural ventilation when the outdoor climate allows, by having natural ventilation options. In spaces with a natural ventilation mode, Building Management Control System (BMCS) to be able to operate louvres. All louvres to seal up to maintain air tightness when closed. 2. Systems to ensure levels of indoor pollutants are maintained at acceptable levels through an increase in outdoor air or maintaining CO_2 concentrations. Refer Green Star Credit 9.2: Indoor Air Quality - Provision of Outdoor Air. 3. Systems to have the appropriate cooling and heating output (kW) for the room size and anticipated room activity (i.e. sedentary work or aerobics) while being as energy efficient as possible. 4. Building designers to submit options for minimising the use of air conditioning in large areas for large groups of people that are difficult to heat, i.e. foyers, halls, seminar rooms. 5. Ceiling fans with summer and winter settings to be considered in any naturally ventilated or mixed-mode spaces. Consider placement of fans around light sources to avoid any flickering effects. 6. Systems to maintain the following internal temperatures and, excluding wet areas and activity rooms, thermostats to be set with a: Cooling Range of 23-25°C and set point of 24°C; and a Heating range of 19-22°C and set point of 21°C. This needs to be considered on a case-by-case basis with input from Council. 7. Systems to maintain Council's optimum humidity range of 40-60% and fresh air rates are to comply with Australian Standards. 8. Optimum air movement is 0.1 - 0.5 m/s (naturally ventilated), 0.1 - 0.2 m/s (air-conditioned) 9. Systems to allow for larger plant associated with high COP outdoor units.
11.2 Technology	1. Reputable brands for air conditioners ≤16kW capacity that adhere to the Council Guidelines include Daikin, Mitsubishi Electric, Mitsubishi Heavy Industry, Fujitsu, and Pioneer. Council will also accept other models that comply with the Council Guidelines. 2. Council is a proponent of the fast transition away from hydrofluorocarbons (HFCs) in line with the Kigali Protocol and requires the adoption of non HFC refrigerants in HVAC equipment as soon as possible. 3. Heat pump technology for heating is preferred instead of gas. 4. All gas boilers to be replaced with heat pumps at end of life on a case-by-case basis, if space is available and the existing electricity supply is capable of the additional load. 5. All systems to have inverter technology. High usage and non-split HVAC equipment to be fitted with electronic commutated (EC) fans. 6. Heat recovery technology should be considered where appropriate, as well as a cost benefit life cycle analysis to demonstrate its superior savings (these systems can be very cost effective). 7. If Variable Refrigerant Flow (VRF)/Variable Refrigerant Volume (VRV) systems are being considered (instead of individual split systems each with their own condensing units) then provide an explanation for this preference as well as a cost benefit analysis to demonstrate its superior savings.

	8. If refrigerant-based equipment is deemed unsuitable (i.e. due to scale), Council prefer high-efficiency adiabatic air-cooled chillers OR reverse cycle air-cooled heat pumps. Consultants to provide system selection matrix to justify strategy. 9. Systems using outside air to have an external air sensor to check air quality before air conditioning the indoor space. Council suggests this outdoor air monitoring system be incorporated in BMCS control and logic (if this is relevant). 10. Chillers must comply with 2021 Minimum Energy Performance Standards. 11. All exhaust ventilation systems that operate non-continuously to be fitted with backdraft damper (up to 300 L/s) or motorised shutoff damper (over 300 L/s). 12. For spaces highly variable occupancy (e.g. auditoriums, gymnasiums etc), CO_2 control to be provided to modulate outdoor air to maintain CO^2 concentration of 700ppm.
11.3 Economy Features	1. Select equipment with the lowest long-term operational cost. If necessary, demonstrate the cost benefit of different systems. Equipment to have a Coefficient of Performance (COP) and Energy Efficiency Ratios (EER) within 15% of the most efficient equivalent capacity unit available. For example, if the 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 0.85). 2. Motorised and fully modulating economy dampers to be fitted to all integrated HVAC systems (packaged or split ducted) with 100% outside air capability. 3. Where continuous 100% fresh air is required (i.e. gymnasiums), closed-loop heat exchange technology to be employed with conversion efficiency greater than 75% and a maximum heat exchanger pressure drop of 100Pa. Systems over 500 L/s to have a low-pressure heat recovery bypass (not equivalent to heat recovery pressure drop). 4. All air handling unit (AHU) fans to include variable speed drive technology capable of being controlled by non-original equipment manufacturing external direct digital controllers. Fan or pump motors to be direct drive. Belts and pulleys are not to be used. 5. All heat pumps to employ variable refrigerant flow (i.e. electronically controlled variable thermostatic expansion (TX) valves or variable speed refrigerant flow/compressors). 6. For large central plant consider using low load plant and/or thermal buffer for efficient low load performance and reduced equipment cycling.
11.4 Metering	1. 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.
11.5 Design of Controls	1. Seek input from Council as to when a BMCS is necessary for large systems. 2. All small systems to have wall mounted controllers with administrator lock out capabilities for altering temperatures, fan speed, run time, to limit most occupants' access to an on off switch, and in many circumstances also have certain automatic deactivation technology. (Remote controls are being phased out.)
11.6 Large System Controls (BMCS)	1. An Optimum Start Function is preferred to reach the desired temperature by occupied times based on ambient temperature levels. 2. Ducted systems >20kW to have warm-up and pull down cycle to operate in full recirculation based on BMCS optimised start-up times (where specified). 3. In mixed mode spaces, consider window/door reed switches to deactivate heating and cooling systems (but not supply air) when windows or doors are open. 4. Staging of central plant to be optimised using advanced BMCS controls OR proprietary equipment staging module (e.g. chillers).

	5. BMCS to be native BACnet platform with remote access via the Council's network system. An alternative central controller would be considered upon the approval of the Property Assets Manager. Any alternative control system must have the capability for future interfacing with a BMCS. 6. An automatic enthalpy global space temperature reset based on real-time outdoor temperature to be incorporated wherever possible except when outdoor humidity is beyond normal. 7. The BMCS to be capable of reporting in real time and historically on HVAC plant subcomponents, room and outside air temperatures and energy consumption. The BMCS should be set up with alarms for high consumption or metering failures. 8. On an existing installation where an existing BMCS already exist and would be retained, the BMCS to be extended to monitor and control any new installation including new controllers and field devices, re-engineering, graphics upgrades and operations and maintenance manual updates.
11.7 Small Systems Controls	1. Connect the HVAC circuit to the security system wherever possible. Exception: air conditioning units serving the computer server rooms. 2. Spaces with set times of use to have wall mounted controller timer set to hours of use. Design to switch on no more than half an hour before occupancy. Occupants to have access to an ON/OFF override switch for out of hours use. All other controls to be housed in a wall mounted controller with administrator lock out. 3. Spaces that are used sporadically to have a manual ON button that is connected to a timer or motion sensor to switch the system OFF automatically after a period of time that aligns with most occupants' hours of use. Users should also have access to an OFF button. All other controls to be housed in a wall mounted controller with administrator lock out. 4. Remote controls are to be phased out. In the interim remote controls are to have a limited temperature cooling range of 23-25°C and heating range of 19-22°C. It is to also have the capability of being set to a "sleep mode" to switch the system off after hours of use. Preferred product: Aircon Off (airconoff.com.au) or equivalent.
11.8 Outdoor Unit(s) and Building Penetrations	1. Where possible, locate outdoor units on ground level for ease of maintenance. 2. Where possible, locate where noise of operation is not a problem. 3. Where possible, locate as close as possible to the indoor head unit and in accordance with manufacturer recommendation. 4. Where possible, shade from direct sunlight. If the outdoor unit is unshaded (e.g. on an exposed roof), outdoor unit condenser coils not to face north or west to avoid direct solar exposure. 5. All new external works to have UV and weather protection. All duct flange connections (i.e. decktite) to be airtight and capped for water & UV proof. 6. All pipework and protect all exposed pipework to be insulated from UV light (i.e. foil tape). 7. Fire-rated building elements: Seal penetrations with a system conforming to AS 4072.1. 8. Non-fire rated building elements: Seal penetrations around conduits and sleeves. Seal around cables within sleeves. If the building element is acoustically rated, maintain the rating.
11.9 Site Management	1. All refrigerant gasses, including HCFCs, CFCs and HFCs to be recovered and destroyed at licenced premises and disposal certificate provided to Council 2. Waste to be recycled and disposed of responsibly. Waste to be sent to landfill as a last resort.

	3. Asbestos Standard Operating Procedures (SOPS) Dec 2019 should be followed where asbestos is suspected, identified or accidentally disturbed.
11.10 HVAC Commissioning	1. Commissioning of the system to include that: operational settings abide by Requirement specifications and Indoor Thermal Comfort and Air Quality specifications; leaks have been tested; maximum acoustic and vibration noise levels are not exceeded. 2. Operating and Maintenance manuals, "as-built" drawings, shop drawings and technical data, including all equipment, piping, controls and electrical works to be provided where applicable. Particularly for large HVAC installations, include three hard copies and electronic copy of Operations & Maintenance Manual containing description of the installation, operating instructions, contact details, commissioning data, shop drawings, as-built drawings, certifications, and manufacturer's technical data, etc to Property Services during Practical Completion. 3. Council's representatives to be trained on the new system. For any BMCS that Council has not used before, provide two days minimum training for at least two Council staff in addition to the general user training for all other Council's stakeholders. 4. The plant to be maintained during the Defects Liability and Maintenance Period including monthly visits & reporting.

12. Elevators

Note: This applies to new buildings with elevators and elevator upgrades

Element	Specifications
12.1 Energy Efficiency and Air Circulation	1. Lifts are to be designed to minimise energy consumption as per the National Construction Code J6 Vertical Transport. 2. Lifts are to be designed to maximise passive fresh air circulation. 3. Emergency battery back-up power supply inside elevator cars to not contain lead or cadmium chemistries.

13. Water Fixtures

Note: This applies to new buildings, upgrades and equipment renewals

Element	Specifications
13.1 Showerheads	1. Low-flow showerhead with WELS rated minimum 3 stars and 7.5L flow rate maximum, such as Methven Satinyet or approved equivalent, are preferred. 2. If possible, install the WELS-rated sticker close by (if provided with product)
13.2 Shower Taps	1. Showers used by staff members to have a single-lever mixer tap that can easily be flicked on and off. 2. Showers used by the public at recreation and sports facilities to be set to timers that lockout water use after 3 minutes for a 30 second period.
13.3 Taps	1. Where existing tap is only to be altered rather than replaced, flow restrictor of appropriate flow rate depending on use to be installed (see flow rates outlined below). 2. Where the whole tap is to be installed/replaced: • Council direction to be sought as to whether hot water is to be provided in bathrooms to wash hands. This will be assessed on a case by case basis. • Tap to be installed with appropriate flow rate depending on use (WELS rating on product is dependent on flow rate, so rely on flow rate instead): - Hand basins 2.5-4 L/min - Kitchen sinks 6-7.5 L/min - Laundry sinks 7.5 L/min - Outdoor taps No limit • For hand basins in public toilets, self-closing taps (5 sec) or spring-loaded activated taps to be installed • For hand basins in all other areas, quarter or half turn taps with ceramic "discs" or "cartridges" to be installed as they provide greater flow and are less prone to leaks • Outdoor taps to be operated by a vandal key. • Movement sensitive taps to be installed in high use areas such as kitchens & bathrooms to avoid germ transmission.
13.4 Toilets and Urinals	3. 4 or 5-star WELS-rated urinal with minimum flush of 1.1L per flush to be installed • Install the WELS-rated sticker (if the product comes with one). • Wherever possible, toilets to be flushed with onsite collected rainwater. • Waterless urinals to be installed as a preference with the correctly specified drainable system to eliminate the risk of pipe corrosion. The contractor to consult with Council to set up a maintenance schedule when specifying these urinals. If waterless urinals are not possible, install a 4 or 5-star WELS-rated urinal with a maximum flush of 1.1L per flush. • Flushing systems in new buildings to be operated by a stainless steel touch plate control unit and solenoid valve. To be installed in existing bathrooms at Council's discretion. • The flushing buttons should indicate flush size by separate large and small buttons. - Exceptions to a stainless steel touch plate control unit would be a motion sensor flush, however this should not be installed at places where the sensor is activated by people walking past for other purposes, or at urinals that have high and fixed use times.

14. Water Tanks

Note: This is relevant to all new building and major and significant upgrade projects. However, Council may choose NOT to include this section when the project already has significant sustainability expertise embedded within the design team, where it may in fact

Element	Specifications
14.1 What the Tank Services	1. Rainwater tanks and suitable pump to be installed at all new building projects and major and significant upgrade projects to provide water to the main suitable outlets at the site (such as toilets, urinals, washing machines, garden irrigation and "water play" at facilities with children).
14.2 Tank Size	1. Tanks to be sized according to application. Match roof capture area and tank size to expected use. A general aim for buildings <1,500 square metres is to provide adequate water for a minimum of 80% toilet flushing demand. Or where deemed suitable, capture 100% of the roof runoff. The Tankulator tool (http://tankulator.ata.org.au/) can help size tanks appropriately to expected use.
14.3 Shape of Tank	1. Where space permits, round tanks to be installed (given they provide the maximum storage capacity to tank material ratio, and therefore minimise resource use)
14.4 Tank Location and Vandal Resistance	1. Tanks to be located as close as possible to what they are servicing. Depending on the tank size and location relative to toilets, it may not be suitable to connect one tank to all toilets, in which case advice should be given regarding whether more than one tank should be installed to cater for toilet flushing needs. 2. Secure (i.e. key access only) covers to be installed on pumps to prevent vandalism and protect pump equipment from exposure to the weather. 3. Tanks to be vandal resistant. That may be above ground in fence enclosure, vandal resistant materials.
14.5 Tank material	1. Steel (colorbond, zinculume or stainless) or concrete materials to be used for bushfire prone areas.
14.6 Pump switches and model	1. Pumps to have an auto changeover function to alternate between mains and tank supply (i.e. Davey Rainbank for smaller sized building or similar approved by Council).
14.7 Flush diverter	1. A first flush diverter to be installed on the tank to redirect contaminant-laden water
14.8 Filtration	1. Filtration is only required if being used for "water play".
14.9 Backflow prevention	1. The installed system to have a backflow prevention device that prevents rainwater from entering the reticulated water supply.
14.10 Gutter shields	1. Gutter shielding devices to be installed where roof catchments are adjacent to trees and vegetation.

14.11 Inlet screens	1. Inlets to incorporate screens or mesh to prevent debris, mosquitoes and other insects entering the tank.
14.12 Areas to Exclude from Catchment Areas	1. Overflows and bleed-off pipes from roof-mounted appliances, such as cooling systems and hot water services not to be discharge onto the roof catchment area. 2. Sections of the roof affected by emissions from any industrial processes within the building to be excluded from the rainwater catchment area.
14.13 Site user notification	1. Site users to be advised that chemicals used for any roof cleaning should be carefully selected to ensure they do not pose a risk to human health or the environment.
14.14 Wet area location (for new buildings)	1. All areas that use water should be located close together to minimise the costs of pumping water and heat loss (from hot water pipes).
14.15 Signage	1. A sign or label on or next to the devices (i.e. toilets) to be installed indicating rainwater is in use.
14.16 Disposal of waste	1. External contractors to demonstrate industry best practice for material separation, composting, recycling and waste disposal. Waste diverted to landfill should be a last resort.

15. Water Management

Note: This applies to new buildings and major and significant upgrades only.

Element	Specifications
15.1 Stormwater Management and Rainwater Capture	2. Comply with Part B: Section 2.6.7 Stormwater management for Commercial & Mixed Use Development of the DCP (2013). 3. Developments with a gross floor area (GFA) >2,000m2 must submit a Water Sensitive Urban Design report from a suitably qualified consultant (similar to the DCP Part B, S.2.6.7, P10 for residential developments). The report must include proof using 5 year Average Recurrence Interval (ARI) that post-development peak event stormwater discharge from the site does not exceed the pre-development peak event stormwater discharge.* **This is in addition to the stormwater quality assessment requirements outlined in DCP Part B, S.2.6.7, P11.* 4. Developments with a GFA <2,000m^2 are to undertake a stormwater quality assessment (Council suggest using the S3QM modelling tool) to demonstrate that the development will achieve the post-development pollutant load standards indicated below: • Litter and vegetation larger than 5mm: 90% reduction on the Baseline Annual Pollutant Load; • Total Suspended Solids: 85% reduction on the Baseline Annual Pollutant Load; • Total Phosphorous: 65% reduction on the Baseline Annual Pollutant Load • Total Nitrogen: 45% reduction on the Baseline Annual Pollutant Load.
15.2 Playing Field Irrigation	1. Playing field irrigation to be controllable remotely and be informed by a site specific water optimisation analysis that takes site conditions and patronage into account.
15.3 Recycled, Grey and Black Water	2. Install a greywater treatment plant where possible. 3. No mains water to be used for water features (e.g. fountains). 4. Consider plumbing black and grey water pipes separately and ensure pipes are easily accessible to facilitate future on-site treatment. 5. Consider harvesting water from recycled water connection.

16. Ecology

Element	Specifications
16.1 Plant Species	1. Facilities/projects located on the boundary of bushland must use 100% local native species. For all others, at least 80% of plants species (and at least 80% of total number of plants) selected for landscaping must be local native species (as listed on Council's website) and require little or no supplemented water (excluding projects focusing on food gardens or community gardens) (DCP, S.2.6.5 & S.3.5.5 – Water conservation).
16.2 For sites Abutting Areas of Ecological Significance	1. For sites abutting protected areas, bushland, remnant ecosystem, wetlands or waterways, a vegetation buffer to be created at boundaries adjoining the land with natural values. The area of the buffer to have a minimum width of 10m along those boundaries or 10% of the site, whichever is greater. The buffer should be densely planted (>5 plants per m2); species diverse and seek to create complex structural layers that maximise habitat value. Additional habitat features should be considered (i.e. hollow logs; rock stacks; nest boxes etc).
16.3 Other	1. The project is to incorporate design features that: • Enhance the ecological character, habitat values and biodiversity of the site. • Result in no net loss of biodiversity on the site. • Provide high quality amenity green space for building occupants 2. No remnant native trees to be cut down. 3. A maintenance plan for natural areas/buffer zones to be incorporated to ensure species succession occurs and habitat values are enhanced. 4. Ecology to align with long term urban planning density objectives. 5. Align Ecology to align with Council's DCP Bushland section and biodiversity provisions. 6. Iindoor plants (minimum one plant per 5 workspaces) to be provided for indoor environment and comfort.

17. White Goods & Stovetops

Note: This applies to new buildings, upgrades and equipment renewals

Element	Specifications
17.1 Energy and WELS Star Ratings	1. Suppliers to only supply electrical equipment outlined below that is within 1 star of the highest energy star rating by product type. 2. Fridges and Freezers not to contain HFC refrigerants, where alternative technologies are readily available. 3. Energy Rating and WELS stickers to be displayed on product. 4. Energy Star ratings for each appliance type: • Freezers: minimum Energy Star rating of 3.5 stars. • Fridges (with or without freezers): - Bar fridges (<150L) – Minimum Energy Star rating of 3.5 stars - Domestic fridges (150L to 929L) – Minimum Energy Star rating of 4 stars - Refrigerated cabinets: N/A. No energy rating label provided by government - Commercial size fridges: N/A. No energy rating label provided by government • Washing machines: - Front Loaders - Minimum Energy Star rating of 4 stars and minimum WELS rating of 4 stars - Top Loaders - Minimum Energy Star rating of 3.5 stars and minimum WELS rating of 3 stars • Dryers: Install a drying rack if feasible to avoid mechanical drying. If required select equipment with minimum Energy Star rating of 8 stars. Note: heat pump dryers will require a drainage line. • Dishwashers: Minimum Energy Star rating of 4 stars and minimum WELS rating of 4 stars. • Televisions - Minimum Energy Star rating of 7 stars. Exceptions: • Operationally critical equipment: the Council Guidelines do not apply to equipment that must perform to Council's specific operational requirements, e.g. devices that Council cannot allow to power down or enter power saving mode. • Energy star: exceptions will be made where there is no 'Energy Star' option that is fit for purpose, however proof of energy consumption levels such as a technical dossier from the manufacturer must be provided.
17.2 Location of Appliances	1. Locate appliances and equipment that generate waste heat, (such as copiers) in areas separated from the spaces requiring cooling (DCP, S.2.6.1 & S.3.5.1 – Energy Efficiency).
17.3 Stovetops	1. All new and refurbished kitchens in small facilities such as community centres, halls and child care centres to have induction stove cook tops (not electric elements or gas cooktops). 2. All new commercial kitchens and kiosks to have fixed induction cook tops (not electric element or gas cooktops). And 20-amp power outlets to be installed to facilitate the use of benchtop portable induction cookers.

18. Specifications for Aquatic Centres

Element	Specifications
18.1 Pool Covers	1. All pools and spas to have pool covers integrated into the design to minimise evaporation and heat loss when not in use, and be able to be automatically operated to reduce manual handling.
18.2 Mechanical Design	1. Water sensitive mechanical design to be included to minimise evaporation rates (e.g. positive pressure HVAC and orientation of fans away from pool surface) with the capability to exceed regulatory water turnover and chemistry standards if required.
18.3 Pool Temperature	1. Pool temperatures to be determined by the pool manager, balancing the needs of user expectations and resource efficiency.
18.4 Surface Water Sunlight Exposure	1. Direct sunlight exposure to surface water will assist pool heating in the cooler months but increase evaporation rates for pool in summer. Shade diagrams and pool siting need to be carefully considered to balance evaporation and heating requirements.
18.5 Surface Water Wind Exposure	1. Wind breaks of external pools to be incorporated to limit evaporation and heat loss of pool water as well as improve user comfort.
18.6 Other Specifications	1. Adhere to all other specifications outlined in all other sections of Part THREE that have relevance to the project.

19. Public Amenities

Guidance Note: Public amenities have different specifications to other Council facility types. Therefore, a separate specification table has been provided that places all public amenity specifications in the one place.

Topic	Specifications
19.1 Public Amenities Lighting and Controls	1. Where possible, any new buildings to be designed to use daylight to provide all interior lighting. If the site is never used outside daylight hours, then install timed motion sensor lighting to enable emergency night time repairs. To this affect, use light-coloured internal finishes to maximise natural light levels. 2. Comply with specifications in the following sections: Indoor and Outdoor Technology; and Indoor Lamp Power Density 3. Design Lux levels according to meet and not exceed by more than 20% the Australian/New Zealand Standards for Interior and Workplace Lighting (AS/NZS 1680.1:2006) (as of 2020, currently at 80 lux). 4. EAny outdoor lights to be smart lighting compatible to enable Council to adopt smart lighting features. This should include a 7-pin NEMA base wired as per the requirements of ANSI C136.41-2013 to a variable output control gear (for dimming/brightening). A bridging plug to be used to allow for central PE cell and/or timer switches to operate as normal until Council seeks to activate smart lighting features. 5. Outdoor, exposed lights to be outdoor-rated (min IP65 rating) and are vandal proof. 6. If indoor lighting is required (i.e. if daylight is inadequate), it is to be controlled with a motion sensor to turn lights OFF after 15 minutes of inactivity. Motion sensors to adhere to AS/NZS 62301 (standby power of less than 0.25W). 7. For amenities that require outdoor entrance/building lighting at night, the outdoor lights to be controlled with a PE cell and timer combination (PE cell with a life span of <40,000 hours of operation, battery backup, preferred product or equivalent: the CABAC weatherproof sunset switch): • PE cell to switch lights ON in diminished daylighting levels, the timer to switch lights OFF when not required any more. • If lights are required early in the morning, timer to be set to switch them ON again when needed and then the PE cell to switch them OFF in increased daylighting levels. • If Council deems necessary, employ a motion sensor to turn on outdoor lights on during night for sporadic use of amenity. 8. Council would consider solar powered public amenity lighting should it be cost effective (e.g. a 5 year simple payback or less and an appealing net present value) that includes the future replacement costs of any batteries. 9. Operating procedure instructions to be provided. 10. Wiring to be concealed or protected.
19.2 Other Relevant Sections of the Council Guidelines	1. Comply with other relevant sections including the following: • Instructions and Implementation Reporting Requirements (Section 2) • Management of Design, Construction and Commissioning (Section 3) • Roofing colour (Section 4, Sub-section 4.3, Specification 2) • **Error! Not a valid result for table.** • Renewable Energy (Section 6) • Materials (Section 10) • Water Fixtures (Section 13) • Water Tanks (Section 14)

- Water Management (Section 15)
- Ecology (Section 16)

PART THREE: MANAGEMENT AND MAINTENANCE OF EXISTING COUNCIL BUILDINGS

20. Sustainable Building Management

Specifications	Responsibility
All leased buildings that are owned by Council but are leased by someone else 1. Council will decide on a case by case basis whether a 2-3 page signed Green Leasing Agreement that commits lessees to using the building sustainably and commits the Council facility managers to annually tracking performance. 2. Energy and water consumption checks and potentially others such as waste management (as decided by Council on a case by case basis) are required – annually buildings ≥1,500m2 and every 2 years for buildings <1,500m2.	Property Management Consultant (engaged by Council)
Buildings owned and operated by Council 1. Buildings ≥1,500m^2 built from 2021 and beyond to achieve 5 Star NABERS rating or equivalent every year 2. All facility equipment replacements and installations such as lighting, air conditioning, hot water, water fixtures to comply with the relevant Sections of Part 2 of the Council Guidelines when equipment expires or part of a dedicated renewal project.	Sustainability Team Facility Managers joint
Aquatic Centre 1. All pipes, valves and equipment to be scheduled for routine checks in the operational manual. 2. Cleaning staff to report any leaks in bathrooms as they happen and task to be written into cleaning contracts as a requirement. 3. Water monitoring alert settings to be set to notify key staff including Pool Manager / Operations Manager, Assets Manager and Sustainability Projects Officer. 4. All pumps with operational capacity over 1000 litres/day - to be fitted with variable speed drives (VSDs) and to be optimised for flow rates, balancing needs of energy efficiency, while performing necessary functions. 5. Pool blankets to be set to cover pools when individual pools are not in use. 6. Pool water & air temperatures to be set to reach setpoint on a just in time basis. 7. Thermal inertia of the pools to be used to minimise electricity network demand and associated charges during expensive electricity network times	Manager North Sydney Olympic Pool

21. Solar Panel Maintenance

Specifications
1. A solar system maintenance contractor is to be retained on a maintenance contract to ensure that all Council PV systems are well-maintained and performing at the optimal output. 2. Primary expectations from the maintenance contractor to include: • Receiving the same system failure alerts as a Council staff member - from the existing solar monitoring platform. • Responding to system failure alerts within 7 working days & reporting to Council with a plan of action 3. The inspection to be conducted by an accredited CEC electrician annually and as a minimum shall include: a. Inspection of the solar PV array to check: • Cleanliness of the modules and the adequate cleaning of modules to maintain minimum yields

- Condition of mounting structure
- Mechanical condition of the array cabling
- Electrical condition of the array cabling

b. Inspection of the inverter to check
- Ventilation is maintained
- Cleanliness
- Adequate connections of cables to the inverter
- Adequate functioning of the inverter

c. Inspection of the balance of system, to check
- Switches/circuit breakers are operating correctly
- Cables/conduits mechanically correct
- Electrical connections correct
- No evidence of electrical arching or overheating

22. Hot Water Maintenance

Specifications

1. When replacing a system, relevant sections of the Sustainability Guidelines for Council Buildings to be adhered to.
2. The recommended maintenance schedule and activities submitted during commissioning of system / building to be adhered to.
3. When hot water is not being used at a facility – for example, if the facility is closed, or the occupants who use hot water aren't using it, then hot water systems to be switched **OFF.**

23. Waste Practices

Specifications

The following waste practices to be adhered to:

1. Council staff to adhere to their respective resource recovery and waste management procedures and policies with respect to recycling and waste disposal.
2. Asbestos Standard Operating Procedures (SOPS) Dec 2019 should be followed where asbestos is suspected, identified or accidentally disturbed.

24. HVAC

24.1 Specifications

Specifications

1. When replacing a system, relevant sections of the Sustainability Guidelines for Council Buildings to be adhered to.
2. Ensure operational settings continue to abide by design specifications.

3. A regular assessment to be performed to confirm all major systems are operating optimally. Council accept suggestions as to the regularity, but suggest it is conducted biannual for the first two years post-install and then annually. The assessment to include but is not restricted to there being:
    - No disjuncture between overall operation times and building occupancy times
    - No disjuncture between operation of specific systems (such as air handling units, boilers, chillers) when the rest of the system is inactive and the building is empty
    - No incompatible components are operating at the same time (e.g. heating, cooling and economiser modes all being active, or chiller and boilers being active)
4. Thermal comfort temperature and air quality parameters outlined in **Table 5** and
5. **Table 6** to be maintained and parameters to be tested on a regular basis and in response to legitimate complaints.
6. Outdoor HVAC units should be maintained to ensure they are kept clear of vegetation and anything that might compromise performance (e.g. leaf litter), and operational settings are abided by.
7. Confer with relevant Council contract manager regarding thermal improvement opportunities to coincide with any HVAC system replacement.

24.2 Thermal, Ventilation and Air Quality Paramaters

The following parameters minimise energy costs, ensure the HVAC system is operating as it was designed and maintain staff thermal comfort. The parameters align with industry guidelines and the New South Wales WorkCover Authority's guidelines and the Federal Department of Employment and Industrial Relation's guidelines for occupational health and safety in an office environment.

Table 5. Thermal and Ventilation Comfort Parameters for Occupied Areas Excluding Wet Areas and Activity Rooms

1. Nov-Mar temperature ranges. Optimum: 23-25°C. Acceptable: 20-26°C.
2. Apr-Oct temperature ranges. Optimum: 19-22°C. Acceptable: 18-24°C.
3. Room temperature is to be measured & controlled between 1.2 – 1.6 metres from floor level in accordance with industry guidelines.
4. Many areas of the building are to have simple room thermometers, while work health & safety staff are to have digital thermometers.
5. Optimum humidity range 40-60%.
6. Minimum recommended fresh air rate is according to Australian Standards
7. Optimum air movement 0.1 - 0.5 m/s (naturally ventilated), 0.1 - 0.2 m/s (air-conditioned).
8. HVAC vent covers – designed to divert vent air from blowing directly onto person positioned directly below – are only to be installed **under arrangement with Property Services**. A key step prior to deciding on installing a cover is to assess that installing it isn't going to impact on the overall performance of the system, or impact adversely on people underneath other vents.
9. Personal heaters and fans are to be used **only under arrangement with Property Services** in extenuating circumstances. In no circumstances may staff bring their own heaters, air conditioners or fans in. After each case has been individually assessed, they need to be provided by Council, be regularly safety tested and tagged and be energy efficient. Floor model bar radiators & portable personal fan heaters are inefficient and carry a high risk of starting fires and are **not** to be used. Note also that overhead radiant heaters are generally not effective and can add to a feeling of discomfort when the head is hot, but the feet remain cold.

Table 6. Air Quality Parameters

1. Air Quality Indicators to conform to worldwide parameters for indoor air quality established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) along with other relevant standards

and industry guidelines such as the World Health Organisation. Council's Methodology Assessment Parameters include:

- Carbon Dioxide (CO_2) – As an Indicator for adequate ventilation and air quality. In the absence of sources of carbon dioxide other than human respiration a measured limit of 1000 ppm CO2 is recommended to satisfy comfort (odour) criteria.
- Carbon Monoxide (CO)
- Airborne Particulate (pm10) – particles with an aerodynamic diameter of 10 micrometres or less and are subsequently inhalable
- Total Volatile Organic Compound (TVOC)
- Surface Microbiological Contaminants – on the coils of the air handling unit.

2. Subjective evaluation – Various indoor activities may give rise to odour of unacceptable intensity or character, or to airborne materials that irritate the eyes, nose, or throat. In the absence of objective means to assess the acceptability of such contaminants, the judgment of acceptability must necessarily derive from subjective evaluations of impartial observers. In this case, the air can be considered acceptably free of annoying contaminants if 80% of a panel of at least 20 untrained observers deems the air to be not objectionable under representative conditions of use and occupancy. (Australian Standard – AS1668.2 1991).
3. Visual observations of the HVAC components and other internal and external influences of Indoor Air Quality to include, but not limited to:
   - Outside Air Intakes and plenum with respect to exhausts or contaminants from others sources
   - Condition and effectiveness of filters installed
   - Condensate Trays and the AHC Fan chambers
   - Supply and Return Air systems and Ductwork in respect to cleanliness.

25. Lighting – Retrofit and Maintenance of Existing Lighting Stock

Specifications

1. Fixtures and fittings to be available from a local or Australian distributor. This ensures that replacements are easy, cost effective and timely to source. Council may consider a variation from this on a case by case basis.
2. For replacing existing lights, use

4. Table 7 as a guide for replacing indoor lights and
5. **Table** 8 as a guide for replacing outdoor lights.

   Exceptions: Note that when replacing one light in a bank of lights, Council accept that in these instances (excluding halogens and incandescents) it is appropriate to replace the light with "like for like" in order to achieve a uniform light output and character. Wherever there is a business case for it – i.e. a 5 year payback or less – and where Council have the available budget, it is Council's preference to change all the lights, so they comply with these specifications.

6. Where a light fitting is used (diffuser or reflector), wipe clean of dust and grime.
7. When altering or installing new controls, comply with:
   - the Indoor Controls & Switching (excluding car parks & public amenities) specifications outlined in Section 9.5
   - the Outdoor controls (excluding car parks and public amenities) specifications outlined in Section 9.6
8. Dispose of waste responsibly (eg: at a facility listed on https://businessrecycling.com.au)

Table 7: Retrofit Indoor Lighting Technology Specifications

Existing lighting to be replaced	Energy-efficient lighting	Specifications
Incandescent	LED bulb	Minimum life 15,000 hours Maximum power consumption: • 6.5W to replace 40W • 8 to replace 60W • 10.5W to replace 75W • 13W to replace 90W • 14.5W to replace 120W
T8 and T5 fluorescent tubes and fitting (entire fixture)	**When replacing whole bank:** LED including fitting and control gear (i.e. entire fixture) that houses either tubes or strip	• Minimum life 50,000 hours • Maximum power consumption: - 20W to replace 36W T8 or 28W T5 - 10W to replace 18W T8 or 14W T5
Halogen Downlights or Infrared Reflective Coated Downlights	LED downlights	• Minimum life span 30,000 hours • Maximum power consumption: - 7W to replace 50W halogen - No more than 4W per square metre • If replacing the fitting, preference is for products that can seal the ceiling space from air leaks
High Bay - Low-wattage (<400W) *(HID include Mercury-vapor, Metal-halide (MH), Ceramic MH, Sodium-vapor, Xenon short-arc lamps)*	LED equivalent (entire fixture)	• Minimum life span 25,000 hours • As a rough guide - 35-70W HID → 10W LED - 70-125W HID → 20W LED - 150W HID → 30W LED - 250W HID → 40W LED - 400W HID → 70W LED
EXIT signs (fluorescent lighting)	LED Exit signs	• Maximum 3W, or 4.5W for larger signs

Table 8: Existing and Proposed Outdoor lighting specifications

Existing lighting to be replaced	Energy-efficient lighting	Specifications
1. T8 and T5 fluorescent tubes and fitting	LED tubes or strips and new fitting (i.e. entire fixture)	• Minimum life 50,000 hours • Maximum power consumption: - 20W to replace 36W T8 or 28W T5 - 10W to replace 18W T8 or 14W T5
2. Incandescent Par 38 spotlights	LED spotlight	• Minimum life 20,000hrs • Maximum power consumption: 13W

3. Side entry low HID wattage (<125W) (e.g. B2224)	LED equivalent side entry fixture	
4. Side entry HID high wattage (>125W)	LED equivalent side entry fixture	• As a rough guide - 150W HID → 70-90W LEDs - 250W HID → 140-170W LEDs
5. HID Floodlight - Low-wattage (LESS than 400W) (generally a light attached to a building and ground mounted and tree mounted uplighting where Council approved)	LED equivalent	• As a rough guide - 35-70W HID → 10W LED - 70-125W HID → 20W LED - 150W HID → 30W LED - 250W HID → 40W LED - 400W HID → 70W LED
6. All exposed outdoor lights	Where a lamp is located outside and exposed to the weather (e.g. floodlights) ensure any replacement is outdoor-rated (minimum IP65 rating)	

26. Water Tank Maintenance

Specifications

1. Clean gutters and roof of vegetation and debris bi-annually as a minimum, and more frequently if large amounts of debris are found during the bi-annual inspection.
2. For roofs with regular debris, discuss with Council the option of installing a gutter guard or mesh system
3. Clear the roof collection area of any overhanging vegetation identified during bi-annual inspection.
4. Check the downpipes and drainage to the tank biannually to ensure they are clean and clear. If needed, flush it out every 12 months.
5. Check and clean out the entry box bi-annually as a minimum, and more frequently if large amounts of debris are found during the bi-annual inspection.
6. Empty and de-sludge tanks every 5 years

Appendix 1. Low VOC Specifications and Guidance on Suitable Products

All new build and upgrade projects on Council assets must comply with the following specification:

Specification (Section 10.6. Internal Surfaces and Finishes, specification 1:
Office furnishings, flooring and internal coatings (i.e. paints, adhesives and sealants) must comply with Low Volatile Organic Compound (VOC) standards outlined by Green Star Credit 13.2: Indoor Pollutants - Paints, Adhesives, Sealants and Carpets.

See more details on the specification in Table 9, Table 10, Table 11 below.
This is followed by sections containing **Error! Reference source not found.** and a

TVOC Compliant Adhesive Products

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Table 9. Council paint specifications

At least 95% of painted surfaces must meet the following total volatile organic compound (TVOC) Content Limits	Maximum TVOC content (g/litre of ready-to-use product)
Walls and ceilings – interior semi gloss	16g/L
Walls and ceiling – interior low sheen	16g/L
Walls and ceiling – interior flat washable	16g/L
Ceilings – interior flat	14g/L
Trim – gloss, semi gloss, satin, varnishes and wood stains	75g/L
Timber and Binding Primers	30g/L
Latex primer for galvanized iron and zincalume	60g/L
Interior latex undercoat (water based) and Interior Sealers	65g/L
One and two pack performance coatings for floors	140g/L
Any solvent-based coatings whose purpose is not covered in table	140g/L

Reference: Green Star IEQ13 Office As built, table IEQ-13.1.

Table 10. Council adhesives and sealants specifications

At least 95% of adhesives and sealants meet the TVOC Content Limits below	Maximum TVOC content (g/litre of ready-to-use product)
Indoor Carpet Adhesive	50g/L
Carpet Pad Adhesive	50g/L
Wood Flooring and Laminate Adhesive	100g/L
Rubber Flooring and Adhesive	60g/L

At least 95% of adhesives and sealants meet the TVOC Content Limits below	Maximum TVOC content (g/litre of ready-to-use product)
Sub-Floor Adhesive	50g/L
Ceramic Tile Adhesive	65g/L
Cove Base Adhesive	50g/L
Multipurpose Construction Adhesive*	70g/L
Structural Glazing Adhesive	100g/L
Architectural Sealants*	250g/L
General Purpose Adhesives and Sealants	50g/L
Dry Wall and Panel Adhesive	50g/L

Reference: Green Star IEQ13 Office As built, table IEQ-13.2; maximum TVOC limits for Adhesives & Sealants.
**Sealants used to enhance the fire and water-proofing properties are included.*

Table 11. Council carpet specifications

All carpets meet the TVOC Content Limits below (taken from Green Star IEQ13 Office As built, table IEQ-13.3)	
Total VOC limit	0.5 mg/m^2 per hour
4-PC (4-Phenylcyclohexene)	0.05 mg/m^2 per hour

Reference: Green Star IEQ13 Office As built, table IEQ-13.3

TVOC Compliant Paint List

Note that this is not an exhaustive list. It was generated in January 2020 and will need to be updated every two years. If considering a product that is not on this list, it may be necessary to contact the paint manufacturer to find out VOC levels. This is sometimes available in the Materials Safety Data Sheet, so check this first before contacting the paint manufacturer. Keep a copy of the data sheet that contains proof of TVOC compliance to supply to Council.

Table 12. TVOC compliant paint list

Paint products	TVOC content (g/litre of product)
Walls and ceilings – interior semi gloss Council Standard:	Maximum: 16g/L
ECOLOUR Eco Living Interior Paint Satin	ZERO
HAYMES Ultra Premium Expressions Semi Gloss	<1g/L
TAUBMANS Easy Coat PRO Semi Gloss	<5g/L
TAUBMANS Pure Performance Interior Walls semi gloss	<5g/L
DULUX Wash & Wear 101 Advanced Semi Gloss – All Colours	<5g/L
DULUX Wash & Wear Kitchen & Bathroom Semi Gloss – All Colours	<5g/L

Paint products	TVOC content (g/litre of product)
DULUX Professional Envir02 Interior Semi Gloss – All Colours	2g/L
WATTYL I.D Advanced Satin	<1g/L
Walls and ceiling – interior low sheen Council standard:	Maximum: 16g/L
ECOLOUR Eco Living Interior Paint Low Sheen	ZERO
HAYMES Ultra Premium Expressions Low Sheen	<1g/L
TAUBMAN Easy Coat PRO Low Sheen	<5g/L
TAUBMANS Pure Performance Interior Walls Low Sheen	<5g/L
DULUX Wash & Wear Kitchen & Bathroom Low Sheen – All Colours	<5g/L
DULUX Professional Envir02 Interior Low Sheen – All Colours	2g/L
WATTYL Ultra Premium Luxury Low Sheen	<1g/L
WATTYL I.D Advanced Low Sheen	<1g/L
Walls and ceiling – interior flat washable Council standard:	Maximum: 16g/L
HAYMES Ultra Premium Expressions Matt	<1g/L
ECOLOUR Tuscan Flat – acrylic paint with an ultra flat finish (interior and exterior)	ZERO
TAUBMAN Pure Performance Interior Matt	<5g/L
DULUX Wash & Wear 101 Advanced Flat – All Colours	<5g/L
DULUX Professional Envir02 Interior Flat Acrylic – All Colours	2g/L
WATTYL I.D Advanced Matt	<1g/L
WATTYL I.D Advanced Total Cover Matt	<16g/L
Ceilings – interior flat Council standard:	Maximum: 14g/L
ECOLOUR	ZERO
ECOLOUR Ceiling White Paint	ZERO
HAYMES Expressions Ceiling White	<1g/L
WATTYL I.D. Advanced Ceiling	<1g/L
TAUBMAN Pure Performance Interior Ceiling Paint	<5g/L
DULUX Wash & Wear 101 Advanced Flat – All Colours	<5g/L
DULUX White Ceiling Paint eco choice	<5g/L
DULUX Professional Envir02 Tintable Ceiling Flat – All Colours	2g/L
DULUX Professional Envir02 Interior Flat Acrylic – All Colours	2g/L
Trim – Gloss, Semi Gloss, Satin, Varnishes and wood stains	Maximum: 75g/L
ECOLOUR Econamel acrylic paint with satin or gloss finish	ZERO
HAYMES Ultratrim Acrylic Enamel Semi Gloss	<36g/L
HAYMES Ultratrim Acrylic Enamel Gloss	<55g/L

Paint products	TVOC content (g/litre of product)
TAUBMANS Pure Performance Interior Trim - 100% acrylic water based paint for doors, skirting boards, architraves and window frames	< 75g/L
INTERGRAIN UltraClear Interior Gloss	15g/L
DULUX Aquanamel Gloss	74g/L
DULUX Aquanamel Semi Gloss	74g/L
INTERGRAIN UltraClear Interior Satin	15g/L
ECOS WoodShield stains - ecospaints.net	ZERO
LIVOS Kunos wood stains - livos.com.au	<75g/litre
ECOLOUR Polyclear: Zero-VOC highly durable clear finish ecolour.com.au	ZERO
OSMO Timber Oils wood stains - osmoaustralia.com.au	<75g/litre
ECOLOUR wood stains- ecolour.com.au	ZERO
Timber and Binding Primers	Maximum: 30g/L
DULUX AcraTex AcraPrime HAR	22g/L
WATTYL Aqua Prep Acrylic Timber Primer	<30g/L
Latex primer for galvanized iron and zincalume	Maximum: 60g/L
DULUX AcraTex AcraPrime	22g/L
DULUX Precision, surface preparation, all metal primer for galvanized iron and zincalume, light grey, product code- 9 300611 551474	<60g/L
DULUX PROFESSIONAL Galvanised Iron Primer	40g/L
DULUX Quit Rust Galvanised Iron Primer Plus	60g/L
WATTYL Aqua Prep Galvanised Iron Primer	<10g/L
Interior latex undercoat (water based) and Interior Sealers	Maximum: 65g/L
ECOLOUR Primer Undercoat Paint (acrylic)	ZERO
HAYMES Ultra Premium Prepcoat Ultracover interior/exterior multi-use primer, sealer and undercoat	<5g/L
HAYMES Ultra Premium Prepcoat Ultraseal water based Acrylic Sealer Undercoat suitable for interior and exterior applications	<1g/L
TAUBMANS Pure Performance Interior Prep	<5g/L
DULUX 1step prep, superior multi-surface undercoat, water based white	<37 g/L
DULUX PROFESSIONAL Total Prep acrylic primer/sealer/undercoat	60g/L
DULUX Acrylic Sealer Undercoat eco choice	5g/L
DULUX Professional Envir02 Acrylic Sealer Undercoat (ASU)	1g/L
DULUX Professional Envir02 Water Based Sealer	5g/L
DULUX PROFESSIONAL Acrylic Sealer Undercoat	45g/L
DULUX Ultrasmooth Acrylic Sealer Undercoat	45g/L

Paint products	TVOC content (g/litre of product)
DULUX PrepLock Water Based Stain Blocker	50g/L
WATTYL Aqua Prep Acrylic Sealer Undercoat Low VOC	<1g/L
WATTYL Aqua Prep Acrylic Sealer Undercoat	<40g/L
WATTYL Aqua Prep Primer Sealer Undercoat	<20g/L
WATTYL Acrylic Plaster Sealer	<5g/L
One and two pack performance coatings for floors	Maximum: 140g/L
ECOLOUR Polyclear Surface Sealer clear, hard finish for timber and concrete	ZERO
INTERGRAIN Enviropro Endure 1 Pack Matt	90g/L
INTERGRAIN Enviropro Endure 1 Pack Satin	90g/L
INTERGRAIN Enviropro Endure 1 Pack Gloss	95g/L
INTERGRAIN UltraFloor Satin	90g/L
INTERGRAIN UltraFloor Gloss	95g/L
FEAST WATSON Enviromax Low Sheen	100g/L
FEAST WATSON Enviromax Semi Gloss	100g/L
FEAST WATSON Enviromax Gloss	100g/L
DULUX Luxafloor ECO2 – All Colours	10g/L
DULUX Roadmaster WB2 – All Colours	40g/L
DULUX Roadmaster Long-Line – All Colours (concrete and bitumen)	40g/L
INTERGRAIN Enviropro Water-Based Epoxy	5g/L
Any solvent-based coatings whose purpose is not covered in table	Maximum: 140g/L
DULUX Quit Rust All Metal (Water Based)	60g/L
DULUX Aquagalv protective coating (waterborne, heavy-duty two-pack, self-curing inorganic zinc silicate primer)	10g/L
DULUX Enviropoxy WBE – All Colours (water borne two pack acrylic epoxy topcoat)	120g/L
DULUX Durebild STE – N35 Light Grey & DULUX Durebild STE Cold Cure Catalyst (two-pack, high solids surface tolerant)	198g/L

TVOC Compliant Adhesive Products

Note: Council rarely purchases flooring and carpet adhesives and sealants directly. They are generally sourced by a contractor or subcontractor as part of a supply and install. It is therefore the responsibility of the contractor to comply with Council's specifications, and up to Council to check compliance. Information about VOC levels for carpet and flooring adhesives are readily available from floor covering retailers

Table 13. Example adhesive products that meet guidelines (not an exhaustive list)

Product Type	Maximum TVOC content* (g/litre of product)
Non-compliant. *Soudal Strong As Nails (solvent based) is commonly used however it does not comply with Council standards. It can be substituted by Soudal Multibond SMX 35 or, for instances where one side is porous Grip & Fix. For further enquiries contact Soudal (www.soudal.com.au).*	
Indoor Carpet Adhesive Council Standards:	**Maximum: 50g/L**
Holdfast Low Voc Carpet Adhesive H108-15	<50g/L
Carpet Pad Adhesive Council Standards:	**Maximum: 50g/L**
No product supplied. Request compliance information from retailer/supplier	
Wood Flooring and Laminate Adhesive Council Standards:	**Maximum: 100g/L**
Soudal SMX 30 Plus solvent, and water-free universal parquet adhesive	<20g/L
Rubber Flooring and Adhesive Council Standards:	**Maximum: 60g/L**
No product supplied. Request compliance information from retailer/supplier	
Sub-Floor Adhesive Council Standards:	**Maximum: 50g/L**
Bostik UL 50 General Purpose Tile & Carpet Underlay	1g/L
Ceramic Tile Adhesive Council Standards:	**Maximum: 65g/L**
Dunlop Wall & Floor Tile Adhesive - not available	50g/L
Dunlop Universal Tile Adhesive	2g/L
Cove Base Adhesive Council Standards:	**Maximum: 50g/L**
Bostik Flowfill Grout GP	1g/L
Multipurpose Construction Adhesive* Council Standards:	**Maximum: 70g/L**
Soudal Multibond SMX 35	8g/L
Soudal Grip & Fix (solvent free)	10g/L
Fuller FulaFlex 570FC PU One component moisture-curing fast cure polyurethane adhesive/sealant (masonry and cement)	<60g/L
Structural Glazing Adhesive Council Standards:	**Maximum: 100g/L**
No product supplied. Request compliance information from retailer/supplier	
Architectural sealants Council Standards:	**Maximum: 250g/L**
CSR Gyprock Wet Area Acrylic Sealant	198g/L
Gyprock Fire Mastic	42g/L
Gyprock CSR Fireseal™ (Aus)	170g/L
General Purpose Adhesives and Sealants Council Standards	**Maximum: 50g/L**
Gyprock Rigitone Primer	48g/L
Gyprock Rigitone Filler	13g/L
Soudal Multibond SMX 35	8g/L
Dry Wall and Panel Adhesive Council Standards:	**Maximum: 50g/L**

Product Type		Maximum TVOC content* (g/litre of product)
Rocor Stud Adhesive		30g/L
Gyprock™ Stud Adhesive		<10g/L
Gyprock™ Jointmaster Topping Compound		<10g/L
The following Gyprock™ products:		<10g/L
Masonry Adhesive	Final Finish Topping Compound	
Back Blocking Cement	Casting Plaster	
Cornice Cement 45	Pottery Plaster	
Cornice Cement 60	Dental Plaster	
Total Cote Lite All Purpose Compound	Superfine Plaster	
Easy Flow All Purpose Compound	Hardwall Plaster	
Multipurpose Joint Compound	Pro-Lite Topping Compound	
Rapid Patch	Spray Plaster	
Patching Cement		
Gyprock™ Cornice Cement 90		15g/L
Gyprock™ Ultra-AP All-Purpose Compound		<1g/L
Gyprock™ Wet Area Joint Compound		33g/L

**Sealants used to enhance the fire and water-proofing properties are included.*

Appendix 2. Definitions

Term	Definition
Australian Building Codes Board (ABCB)	The ABCB is responsible for the development of the National Construction Code (NCC) Series.
Building Management Control System (BMCS)	A building management and control system (BMCS) controls and monitors the internal environmental conditions of commercial buildings. The controllers are digital and operate with embedded software which has been developed specifically for major systems, most commonly used at Council to control large heating, ventilation and air conditioning equipment, and occasionally large lighting systems.
Chlorofluorocarbons (CFCs)	Chlorofluorocarbons are a group of odorless manufactured chemicals that have been banned since 1996 due to the damage they cause to the earth's ozone layer.
Coefficient of Performance (COP)	The COP of a heat pump, refrigerator or air conditioning system is a ratio of useful heating or cooling provided to work required
Council Guidelines	Council Guidelines is the abbreviated term for the Sustainability Guidelines for Council Buildings.
Development Control Plan (2013) (DCP)	North Sydney Development Control Plan 2013. This is often referred to throughout the Sustainability Guidelines for Council Buildings as DCP (2013).
Energy Efficiency Ratio (EER)	The EER of a heat pump, refrigerator or air conditioning system is a ratio of useful cooling provided to work required. Equivalent to COP (which can be used for both heating and cooling)
Energy Rating	In Australia and New Zealand, Energy Rating is a mandatory, national labelling scheme. An energy rating label or energy rating is a label affixed to various appliances prior to retail sale, which allows consumers to compare the energy efficiency of product and allows consumers to know how much power a particular model will use to run. See http://www.energyrating.gov.au
Ecologically Sustainable Development (ESD)	Ecologically Sustainable Development (ESD) commonly includes achieving or exceeding 'best practice' standard for buildings, infrastructure, transport, landscaping and streetscapes.
Formaldehyde	A resin used as an adhesive, surface coating, foam or in the manufacture of laminates and sandwich panels. Formaldehyde can present a health hazard from off gassing. It is a known carcinogen as well as being an irritant, cause birth defects and can affect the immune system personal awareness and can cause fatigue.
Green Building Council of Australia (GBCA)	The GBCA, established in 2002, is a not-for-profit industry association that promotes sustainability in the built environment. The GBCA is best known for developing the Green Star rating system for buildings and communities.
Green Star	Green Star is Australia's largest voluntary sustainability rating system for buildings, fitouts and communities. Projects must be certified to achieve a Green Star rating.
Hydrofluorocarbons (HCFs)	Hydrofluorocarbons are a type of synthetic greenhouse gas, mostly used in refrigeration and air conditioning equipment. HFCs generally have a high global warming potential which means they have a greater ability to trap heat in the atmosphere compared to a similar mass of carbon dioxide.
Independent Commissioning Agent	An independent commissioning agent is a person who is: An advocate for, and reports directly to, the Council project owner

Term	Definition
	Independent of any consultant, contractor or sub-contractor organisation that has been involved in the design or installation of the nominated systems A registered professional engineer or qualified technician with demonstrated knowledge on nominated systems commissioning, and has previous experience with the commissioning process of at least 2 projects similar in scope. The qualified independent commissioning professional role can be fulfilled by one or multiple persons, provided that all meet the requirements laid out above. It can also be fulfilled by a person who is part of the client's organisation, if the person is qualified to do so. An independent commissioning company may also meet these requirements.
Large building	Buildings with a gross floor area ≥ 1,500m^2. Common 'large' Council buildings include the Administration building, Stanton Library, depots, North Sydney Olympic Pool, multi-level parking stations, large rental properties.
Lux	Illuminance per area
Minimum Energy Performance Standards	Energy efficiency requirements for certain products and appliances under the national Greenhouse and Energy Minimum Standards (GEMS) Act 2012
National Construction Code (NCC)	The NCC provides the minimum necessary requirements for safety, health, amenity and sustainability in the design and construction of new buildings (and new building work in existing buildings) throughout Australia. It is managed by the Australian Building Codes Board.
NCC Facade Calculator Report	The NCC Façade Calculator Report enables compliance with the Requirement's building fabric and glazing specifications to be verified. The calculator can be downloaded from the Australian Building Codes Board website. They also provide online tutorials in using the calculator (www.abcb.gov.au).
NCC Lighting Calculator Report	The NCC Lighting Calculator enables compliance with the Requirement's lighting intensity (watts per square metre) specifications to be verified. The calculator can be downloaded from the Australian Building Codes Board website. They also provide online tutorials in using the calculator (www.abcb.gov.au).
PE cells	Photoelectric cells are daylight sensors. They can be used to control the amount of light output from light fittings.
Poly Vinyl Chloride	A common building material mostly used for pipes and electrical cables. The production of PVC requires toxic chemicals and heavy metals and can cause pollution. PVC also is a Volatile Organic Compound, which is an indoor contaminant.
Small building	Buildings with a gross floor area <1,500m^2. Common 'small' Council buildings include park buildings, community centres, small rental properties, public amenities.
Specifications	Detailed provisions which must be satisfied to achieve the Council Standard.
S3QM	S3QM is based on a regression analysis of MUSIC simulation outputs and is for developments <2,500 m2 (WaterNSW, 2019, MUSIC in Sydney Drinking Water Catchment) (www.s3qm.com.au)
R Value	A measure of heat transfer that is used for insulation and windows. The higher the R- value, the lower the heat transfer (lower heat loss = more insulative value)
Solar Heat Gain Coefficient (SHGC)	A measure of the proportion of solar radiation that is transmitted through glazing. A higher SHGC corresponds to a larger percentage of heat being transferred through the glazing.

Term	Definition
Sustainable Building Guidelines Reporting Tool	The Sustainability Guidelines Report is a brief Excel document that – in most instances – is where contractors provide an index to building plans, reports and relevant Section J calculator reports that demonstrate compliance with the Sustainability Guidelines for Council Buildings.
Volatile Organic Compounds (VOC)	Chemical compounds based on carbon and hydrogen structure that are vaporised at room temperatures. VOCs are one type of indoor air contaminant. These chemicals are found in paints and other building products. They are known to cause health problems including asthma and other respiratory ailments and in higher concentrations can have acute and long term effects on the central nervous system and some are suspected of causing cancer.
WELS	Australia's water efficiency labelling scheme, requiring certain products to be registered and labelled in accordance with the standard set under the national Water Efficiency Labelling and Standards Act 2005. See http://www.waterrating.gov.au
Water-Sensitive Urban Design (WSUD)	WSUD is a land planning and engineering design approach which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.