Policy ID no: DP&ED 7 – CEO

Moreland Sustainable Buildings Policy

Date Authorised by Chief Executive Officer or Council:	8 May 2018
Commencement Date:	8 May 2018
Review Date (5 years from authorised date):	8 May 2023
Responsible Department	City Strategy and Design

This policy has been authorised and is included on The Grapevine.

Nerina DiLorenzo
Chief Executive Officer
30 / 5 / 2018

D18/197612

1 INTRODUCTION

Moreland City Council is responsible for over 200 buildings that are utilised by staff, committees of management and community members. Buildings, being large consumers of energy, water and other resources, play an important role in achieving Council's vision of a sustainable Moreland and demonstrating leadership.

The purpose of this Sustainable Buildings Policy is to incorporate sustainable design and operation into all Council buildings. This will be achieved by applying the policy to all new Council buildings and projects to upgrade, renovate and refurbish existing buildings where practical.

This policy applies to buildings owned or managed by Council. The policy is designed to provide clear, industry-understood requirements for use by project managers, designers, architects, engineers and other building contractors. These requirements are deliberately specific; they are written for direct insertion into tender specification documents.

2 CONTEXT

2.1 Alignment

This policy is linked strategically to the following adopted policies/plans:

- Council Plan 2017-2021
- Moreland Planning Scheme – Clause 22.08 - Environmentally Sustainable Design
- Corporate Carbon Reduction Plan 2015-2020
- Watermap 2020
- Procurement Policy 2018
- Updated Indoor Thermal Comfort Policy 2016
- National Construction Code (NCC), Building Code of Australia Class 2 to Class 9 Buildings

2.2 Organisational context

The Sustainable Buildings Policy aligns with a number of Council policies as listed above in 2.1. This policy works in conjunction with all statutory building and planning requirements. The requirements of this policy sit over and above any statutory requirements such as the National Construction Code and do not replace these requirements.

2.3 Research and other drivers

The benefits to be gained from sustainable design are not confined to the environment, but also have a wider range of health, social and economic benefits. Inclusion of ESD principles commonly result in significant building operating cost savings with minor to medium additional capital costs. The information below demonstrates significant environmental savings, return on investment and increased productivity associated with sustainable buildings and includes case studies of local government projects and Moreland buildings. The Sustainable Buildings Policy will help deliver affordable buildings that are energy and water efficient, more cost effective to operate and comfortable to use.

The Value of Green Star: A decade of environmental benefits by the Green Building Council of Australia (2013) finds 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.

Return on Investments

The Pitt and Sherry Benefit Cost Analysis (D15/220376) was produced as part of the expert evidence for the ministerial advisory committee for the C71 Environmentally Sustainable Design Policy amendment to the Moreland planning scheme. It demonstrates that best practice environmental sustainable design has significant lifecycle cost benefits.

Moreland Case Studies of ESD initiatives in building works

A number of Moreland case studies demonstrate how Moreland City Council has achieved significant energy savings of 20-30% through implementation of the Carbon Management Strategy and highlights the financial and social savings that can be achieved by implementing ESD minimum standards at the start of a building project.

In one case study the ESD minimum requirements for building fabric are modelled as capital cost neutral while delivering a 7% improvement on energy performance. The importance of monitoring on the implementation of the ESD standards to reduce poor outcomes through post construction audits is demonstrated *(See: D14/337889 ESD - Built Environment - ESD Buildings Policy - Moreland Case Studies - ESD Buildings Policy)*

Local government Green Star projects

The case studies demonstrate sustainability costs and expected pay back periods.

- The Corso North Lakes – Moreton Bay Regional Council (Qld) achieved a 5 Star Green Star – Public Building Design rating. The project has a 50% reduction in greenhouse gas emissions compared to similar sized buildings built to code.
- Civic Centre Redevelopment Project – City of Gosnells (WA) achieved a 5 Star Green Star – Office Design rating. The project had a sustainability 'premium' of $750,000 or 3 per cent on a $26 million project and a payback period completed within five years.
- Melton Library and Learning HUB – Melton City Council (Vic) achieved a 5 Star Green Star – Public Building Design and As Built rating. The project has achieved annual utility cost savings of $29,800, including $23,700 savings in gas and $5,000 in water, compared to non-Green Star buildings.
- Council Administration building – Wollongong City Council (NSW) is aiming for a Green Star – Performance rating. Council believes it is *'important to aim high for its first community aspiration… and set the benchmark for the community'*.

3 OBJECTIVES

The objectives of this policy are:

- To reduce building operational costs.
- To demonstrate corporate responsibility and leadership to the community.
- To improve comfort, health and wellbeing outcomes for building users.
- To ensure the efficient use of energy and reduce total operating greenhouse gas emissions.
- To reduce peak energy demand.
- To ensure the efficient use of water, reduce potable water use and achieve best practice stormwater quality outcomes.
- To ensure waste avoidance, reuse and recycling during construction.
- To ensure long term reusability of building materials.

Note: Different building project types vary in their ability to improve sustainability. It is recognised that projects may not need to embrace all categories to achieve an acceptable level of sustainability as the scope of works of the project will limit the ability to target every objective. It is not intended that the mandated scope of works is extended in order to satisfy all objectives.

4 POLICY DETAILS

4.1 ESD MINIMUM REQUIREMENTS

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

Moreland City Council has sustainable design information requirements for any development (including Council projects) requiring a planning permit; this framework is known as Sustainable Design Assessment in the Planning Process (SDAPP). This Policy works in partnership with SDAPP, all internal projects as outlined above will apply this policy from project conception to ensure that initial project scope and budget preparation includes these minimum requirements. Projects that require a planning permit will then be required to prepare a Sustainable Design Assessment (SDA) for small developments or Sustainability Management Plan (SMP) for large developments. See Roles and responsibilities for further information.

Lighting

Technology	• All luminaires to be LED.
Illumination	• Lighting illumination power density(LPD) target of no greater than 5 watts/m^2 average across the building (indoor lighting). • Lighting to have minimum colour rendering index (CRI) of 80. • Lighting with base colour temperature of 4000 Kelvin (+/- 5%) is MCC preference with alternative lighting temperatures to be considered for certain applications through consultation with Council. • For offices: Ceiling area should have an average surface illuminance of at least 30% of the lighting levels on the working plane to improve uniformity of lighting. 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*. Use light interior surfaces and external/internal light shelves to facilitate diffuse light penetration into space. • Design lux levels are to target the WorkSafe Guidelines, which are a 15% reduction on the recommendations listed in the Australian Standards. • For offices: If ambient light is below 240 lux (aligning with WorkSafe Guidelines), task lighting providing 200 to 500 lux at the work surface can be used to provide a lighting solution for task based activity areas to reduce bulk lighting requirements. Refer WELL Building Standard Feature 53: Visual Lighting Design, Part 1 (c). • All bare light sources must 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). • Project must 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.*
Control Systems	• When no Building Management System (BMS; Direct Digital Controller / Programmable Logic Controller) or security access system is required. Lighting control should revert to occupancy (PIR) sensors, as per below. Lighting to be controlled by BMS or security access system, when BMS is included in project. Integration between lighting and BMS via a Programmable Logic Controller (PLC). • For all common and storage areas include occupancy (PIR) sensors. Avoid the use of complicated and/or proprietary lighting control systems, standalone sensors with remote control programming are preferred. • Sensors to be installed above room entry facing the activity area of the room unless otherwise specified. Sensors not to be positioned to face doorways. • For Class 5 and 9a buildings only, the size of individually switched lighting zones must not exceed 100m^2.

Heating Ventilation and Air Conditioning (HVAC)

HVAC Technology	Moreland is moving towards 100% electric buildings and is taking steps to actively reduce the usage of natural gas in building operations. Gas fired heating and hot water solutions will be considered only where required due to operational constraints. Preference heat pump technology for heating and/or cooling instead of natural gas. Equipment to have Coefficient of Performance (CoP) and Energy Efficiency Ratios (EER) within 15% of the most efficient equivalent capacity unit available. • If VRF/VRV systems are being considered then an analysis should be provided to demonstrate the cost benefit of refrigerant heat recovery. Consultant to ensure equipment can maintain internal temperatures during design summer and winter ambient temperatures. From early planning phases, designers must allow for larger plant associated with high COP outdoor units. • Where refrigerant based equipment is deemed unsuitable due to scale of project, preference is for high efficiency adiabatic air cooled chillers and high efficiency condensing gas boilers OR reverse cycle air-cooled heat pumps. Consultants to provide HVAC selection matrix to justify strategy in relation to project specific requirements.
	• All natural gas boilers specified to include fully modulating condensing technology at or greater than 96% net efficiency. • Where continuous 100% fresh air is required (i.e. Gymnasiums), HVAC systems will employ closed loop heat exchange technology with conversion efficiency greater than 75%. Specify maximum heat exchanger pressure drop of 100Pa. Specify low pressure heat recovery bypass (not equivalent to heat recovery pressure drop) for systems over 500 L/s. • 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).

	• For spaces with highly variable occupancy (e.g. auditoriums, gymnasiums etc), provide CO_2 control to modulate outdoor air to maintain CO_2 concentration of 700ppm. Ceiling fans shall be considered in any naturally ventilated or mixed mode spaces to reduce need to air-conditioning operation.
Economy features	• Motorised and fully modulating economy dampers to be fitted to all integrated HVAC systems (packaged or split ducted) with 100% outside air capability. • All Air Handing Unit fans are to include Variable Speed Drive technology capable of being controlled by non-proprietary systems. Fan or pump motors to be direct drive. Belts and pulleys are not to be used. • All heat pumps to employ variable speed / variable refrigerant flow compressors. • 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. • For large central plant consider using low load plant and/or thermal buffer for efficient low load performance and reduced equipment cycling.
Controls	• All small projects to include proprietary central controller. All large projects to include open protocol Building Management System (BMS). • Specify occupancy control for small systems (active on, passive off*) unless system is known to operate continuously for 6+ hours per day. *Active on, passive off works on the basis that the system has to be manually started (e.g. push button with run-on timer), but passively deactivated (e.g. motion sensor).* • For ducted systems over 20kW, warm-up and pull down cycle to operate in full recirculation based on BMS (where specified) optimised start-up times. • In mixed mode spaces, provide window/door reed switches to deactivate heating and cooling systems (but not supply air) when windows or doors are open. • For large systems, staging of central plant to be optimised using advanced BMS controls or proprietary equipment staging module (e.g. chillers). • Controls strategy to adhere to Moreland's Indoor Thermal Comfort Policy including restricted temperature control (excluding wet areas and activity rooms) and restricted run time parameters via a direct digital Building Management System (BMS). • Split systems other than split ducted (hi wall, cassette, under ceiling) will include proprietary wired wall mounted controllers with administrator lock out capabilities of hi and low temperature, fan speed, run time. Direct occupant control – outside of Moreland's Indoor Thermal Comfort Policy – of space temperature is not permitted. Infrared remote controllers (IRCs) are not to be used.
Refrigerants	• All refrigerants must be zero ODP in composition and manufacture. Refrigerant leak detection must be provided for water cooled systems.

Hot Water

Hot Water Technology	Council has a preference for high efficiency electric hot water systems that can link to existing or future solar PV. Facility-specific operational requirements will determine if gas boosted hot water is acceptable for use. • Preference for high efficiency electric hot water heat pumps to be used. heat pump technology to have a CoP within 15% of the most efficient equivalent capacity unit available. • Instantaneous electric systems may be used for remote or infrequent/low-flow uses. • Hot water system gas boosters (where required) to be high efficiency and employ condensing technology at or greater than 96% net efficiency (including manifolded arrays where staged multiple units are required). • Hot Water storage systems with integral natural gas boosting are not to be used.
Pipe insulation	• All hot water piping (flow and return) above 25mm Outside Diameter (OD) shall be insulated with pre formed sectional glass wool or polyester insulation in accordance with NCC Specification J5.2c compliance requirements. All exposed pipe work insulation shall be sheathed with 0.5mm thick zinc anneal sheet metal or approved equivalent. All sheathing shall be installed in a manner which resists entry of water and UV light. • All hot water pipes (flow and return) 20mm Outside Diameter (OD) or less shall be fully insulated in accordance with NCC Specification J5.2c compliance requirements. All exposed pipe work insulation shall be sheathed in a UV protective coating, i.e. foil tape or equivalent coating. All sheathing shall be installed in a manner which resists entry of water and UV light. *Note: Pre-lagged (Kemlag or Polylag) pipe and PEX (or crosslinked polyethylene) hot water pipe is not considered to be insulated in accordance with requirements and must be insulated in accordance with NCC Specification J5.2c.*
Control Systems	• Ring main hot water systems will 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 circulate any accumulated bacteria through 60 degree water to kill any Legionella bacteria. • DHW operation to be controlled via BMS or linked to building security access system for smaller projects.

Renewable Energy

Renewable Energy Systems	• Reduce total peak electricity demand by at least 20% through the use of on-site renewables. • Design roof space to maximise the capture of solar energy e.g. create unobstructed roof space, ideally pitched towards north and allowing for penetration free anchoring.

	• Ensure roof-mounted solar infrastructure is safe and accessible for service/cleaning as required. • No structures or roofing element can shade any proposed or existing solar panels.

Water Efficiency and Stormwater

Fixtures and fittings	• Shower heads: 3 star WELS, < (less than) 7.5L/min flow rate. • Shower taps: push button time delay variable temperature mixing valve (i.e. Enware TFC790925 or approved equivalent). • Toilets: 4 star WELS. • Urinals: 6 star WELS, sensor operated. • Taps: 6 star WELS, push button.
Washing machines / dishwashers / other appliances	• Within one star of Best WELS rating available. • *(See Equipment section for Energy Ratings)*
Stormwater quality	• Benchmark: Design the stormwater management system to go 20% 'Beyond Best Practice' stormwater management i.e. 20% above the Urban stormwater best practice environmental management guidelines (BPEMG). Beyond Best Practice stormwater management can be demonstrated by either achieving a 120% score in the Melbourne Water STORM tool or MUSIC modelling. Target: Where deemed suitable, 85% retention of stormwater on a lot, which may require a combination of rainwater tanks and infiltration (non-lined) rainwater gardens.
Rainwater tanks	• Rainwater harvesting system to supply toilets, urinals, laundry, garden irrigation, etc. Match roof capture area and tank size to expected use. The Tankulator tool (http://tankulator.ata.org.au/) can help size tanks appropriately to expected use. • Design roof/landscapes and drainage system to maximise the capture and storage of high quality rainwater. • Target: Where deemed suitable, capture 100% of the roof runoff.

Comfort

Acoustic Comfort	• Internal ambient noise levels in regularly occupied areas are suitable and relevant to the activity type in the room. *Refer Green Star Credit 10.1: Acoustic Comfort - Internal Noise Levels*. • Regularly occupied areas are built to reduce the persistence of sound to a level suitable to the activities in the space. *Refer Green Star Credit 10.2: Acoustic Comfort - Reverberation.*
Indoor Air Quality	• Provide sufficient outdoor air 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.*
High Quality Amenity Spaces	• High quality amenity space(s) are provided (a general amenity area or, additional breakout space), intended for use by staff or regular occupants, and which 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.*

Materials

Concrete	• 30% minimum cement replacement minimum with 40% as a stretch target. *Refer Green Star Credit 19B.1.1: Life Cycle Impacts - Concrete - Portland Cement Reduction*. • 40% coarse aggregate substitution or 25% fine (sand) aggregate substitution. *Refer Green Star Credit 19B.1.3: Life Cycle Impacts - Concrete - Aggregates Reduction*. • At least 50% of all mix water for concrete used in the project is from a captured or reclaimed source. *Refer Green Star Credit 19B.1.2: Life Cycle Impacts - Concrete - Water Reduction*.
Steel	• Steel to be sourced from a Responsible Steel Maker in accordance with Green Star Design and As Built guidelines. *Refer Green Star Credit 20.1: Responsible Building Materials - Structural and Reinforcing Steel*.
External surface finishes	• 75% of the total project site area comprises 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 PV. *Refer Green Star Credit 25: Heat Island Effect*.
Timber	• At least 90% of all timber used to be FSC or PEFC accredited or re-used/recycled. *Refer Green Star Credit 20.2: Responsible Building Materials - Timber Products*. • The use of tropical hardwoods such as Merbau, Mirabow, Ipil, Kwila, Vesi are not permitted under any circumstances. • 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*. • Preference for laminated timber over native structural hardwoods.
Poly Vinyl Chloride (PVC)	• To reduce environmental and health impacts for building users internal fits outs 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. • *A Material Safety Data Sheet is a means of verifying that a product does not contain PVC.*
Internal surfaces and finishes	• Low Volatile Organic Compound (VOC) office furnishings, flooring and internal coatings (i.e. paints, adhesives and sealants). *Refer Green Star Credit 13.2: Indoor Pollutants - Paints, Adhesives, Sealants and Carpets.* • Plasterboard with 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*. • Use raw and unfinished surfaces where appropriate.
Other	• Maximise opportunities for the use of recycled materials & equipment. • Specify durable materials (via manufacturers' warranties) that can be readily recycled at the end of their life cycle. Products/materials with Stewardship Programs will be given preference. *Refer Green Star Credit 21: Sustainable Products - (E) Stewardship Programs for further detail.*

Building Fabric

Walls, Roofs, Floors, Glazing	• Entire building envelope insulation R-value to be 25% above BCA Deemed-to-Satisfy requirements, or meet the following R-values: - Walls R 3.5. - Ceilings R – 4. (Upper roof surface solar absorbance value to be not more than 0.4). - Suspended Floor R – 2.5. - Vertical outer edge of any slab on ground R - 1.25. • Independent of R-value requirements all external walls, roofs and lightweight floors must have an approved radiant barrier (i.e. Reflective Foil Laminate, Aircell, RFL blanket, foilboard, etc) installed that has a NCC (National Construction Code) or a NFPA (National Fire Protection Association) flammability rating. • All glazing in areas with active heating and cooling to be minimum double glazed with thermally enhanced or thermally broken frames and meet the following requirements: • Glazing systems with a maximum (total system) U-value of 2.8. • Glazing systems with a minimum visual transmittance of 0.4. • Unshaded glazing Solar Heat Gain Coefficient (SHGC) <0.4. • Where DTS provisions cannot be met then a JV3 solution will be required to demonstrate compliance as per the BCA and achieve a minimum 10% improvement in the proposed design when modelled against a reference case. This does not negate the earlier initiative for 25% building insulation improvement or the minimum glazing requirements.
Ceiling heights	• Ceiling heights to be a minimum of 2.7 metres to enable safe operation of ceiling fans.
Daylight and shading	• Where there is excessive west-facing glazing, shading options will need to be investigated. • Vision glazing shading: Fixed devices must be shown to shade the nominated plane, 1.5m in from the viewing façade. The nominated plane must be shown to be shaded from direct sunlight for 80% of the nominated occupied hours for each day of the winter and spring equinoxes and the summer and winter solstices. Refer Green Star Credit 12.0: Visual Comfort - Glare Reduction: 12.0A Fixed Shading Devices. • Minimum 40% of regularly occupied spaces to comply with Green Star daylight requirements. *Refer Green Star Credit 12.1: Visual Comfort - Daylight*. • For offices: Operable blinds with VLT ≤ 10% to be provided to North, East and West in occupied spaces. *Refer Green Star Credit 12.0: Visual Comfort - Glare Reduction: 12.0B Blinds or Screens*.
Building Sealing*	Building Sealing is a requirement under BCA Section J4 Building Sealing. • Ensure windows and building fabric are well sealed e.g. compression seals on doors and operable windows, taped airtight membranes in building envelope. • Building wrap to be installed in a way that seals the whole wall with connector strips at top and bottom of walls, all joints sealed, and all

	penetrations sealed to building wrap (including pipes, wiring, windows etc). • All exhaust fans to be fitted with self-sealing dampers. • The building detailing and construction should be capable of achieving a building air tightness test result of less than 5 m3/hr/m2 @ 50 Pa. Any air tightness testing to be carried out in accordance with ATTMA TSL2 Non-Dwellings – October 2010 standard. • 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.

Equipment Fit Out

Equipment Efficiency standards	• Equipment used in fit out to be within one star rating of best available technology for energy and water efficiency. i.e. fridge / freezer / dishwasher (4 star water rating and 3.0 star energy rating) / oven / cook top / range hood/ hot water urns. Water efficiency of appliances can be determined by using http://waterrating.gov.vic.au/consumers/index.html. Energy efficiency of appliances can be confirmed on the website www.appliancesonline.com.au with performance ratings based on information provided on the website www.energyrating.gov.au.

Transport

Fuel Efficient Transport	• Allowance for at least 2 single phase sub-circuits (32 Amp capacity) on switch board to allow for e-vehicle recharging. • Where deemed suitable, as a means of future proofing, allowance for at least 1 three phase sub-circuit (80 Amp capacity) to allow for DC fast recharging for e-vehicles. • Dedicated parking is to be provided for electric vehicles as well as associated charging infrastructure commensurate to the size of the project.
Bicycle Facilities	• Covered bike area to accommodate on ground bicycle parking in excess of the Moreland Planning Scheme (bike parking for at least at least 7.5% of total regular occupants and 5% of peak visitors • Locker ratio of 1.2 per bicycle rack required for best practice (handbook only requires 1 per bicycle rack = standard practice). The design of the end-of trip facilities must be appropriate to encourage their use over that of private vehicle use. Therefore, the project team should be able to justify how their location, locker sizes, privacy requirements, and size are conducive to this aim. Refer Green Star Credit 17B.4: Sustainable Transport - Active Transport Facilities. • Continuous and accessible travel to the bike parking area. If bike parking area is external, access between building and bike parking should be protected from weather.

Urban Ecology

Biodiversity	• The project is to incorporate design features that: - Enhance the ecological character and biodiversity of the site. - Result in no net loss of biodiversity on the site. - Provide high quality amenity green space for building occupants (refer Comfort section).

Management

Commissioning	• Commissioning of HVAC systems to include adherence to Moreland's Indoor Thermal Comfort Policy requirements. • An Independent Commissioning Agent (ICA) is required for all Major projects. *Refer Green Star Credit 2.4: Independent Commissioning Agent.* • Where an Independent Commissioning Agent is engaged they are to review project compliance with the Moreland ESD Matrix at each project phase. • Quarterly building tuning to be undertaken for at least 12 months following practical completion. *Refer Green Star Credit 2.3: Commissioning and Tuning - Building Systems Tuning*. • Establish a service and maintainability review procedure to facilitate design input from the facilities manager and relevant Moreland operations staff, and any relevant suppliers and subcontractors (if engaged). *Refer Green Star Credit 2.1: Commissioning and Tuning - Services and Maintainability Review*. • Where deemed suitable, it is desirable that the Main Contractor has and maintains ISO14001 accreditation. • Where deemed suitable, Construction Indoor Air Quality (IAQ) Plan must be implemented during construction and pre-occupancy phases of a building. The IAQ Plan must meet or exceed the recommended control measures of the SMACNA IAQ Guidelines for Occupied Buildings under Construction, 2008; Protect HVAC systems to prevent contamination; and require ductwork to be cleaned prior to occupation or sealed and protected during construction. Refer Green Star Credit 9.1.3: Indoor Air Quality - Ventilation System Attributes - Cleaning Prior to Use and Occupation.
Responsible Construction Practices	• A comprehensive project-specific best practice Environmental Management Plan must be developed to manage environmental issues from excavation, demolition works construction activities. *Refer Green Star Credit 7.0: Construction Environmental Management - Environmental Management Plan.* • Recycle and/or reuse at least 90% of demolition and construction waste. *Refer Green Star Credit 22B: Construction and Demolition Waste - Percentage Benchmark.* • For large projects, Tenderer and Contractor to illustrate the promotion, program and management of positive culture, mental, physical health for site activities, facilities and site workers and contractors.

	• For large projects, Tenderer and Contractor to illustrate the promotion and management of sustainable educational practices to their site workers and contractors.
Operational Waste Management	• An Operational Waste Management Plan (OWMP) is to be developed for the project and the strategies reflected in the building design. *Refer Green Star Credit 8: Operational Waste for guiding principles.*

5 POLICY IMPLEMENTATION

Capital Works Planning and Delivery is responsible for ensuring the delivery of activities across the Engineering Services, Asset Management, Building Maintenance and Building Projects. As such, the Manager of Capital Works Planning and Delivery is accountable for overseeing the successful implementation of the Sustainable Buildings Policy on council projects.

In conjunction with the Building Projects Unit management processes, the Project phases involving formal ESD review are as follows:

1. Project Due Diligence – Draft Moreland ESD Matrix for project with Capital Works Project Manager
2. Project Scoping – Moreland ESD Matrix tailored to project specific requirements
3. Stakeholder Design Kick-off – design workshop participation
4. Stakeholder Design Review #1 – Review of Schematic Design (for Large Projects) / Preliminary Design (Small projects)
5. Stakeholder Design QA Review #2 – Review of Detailed Design (for Small and Large Projects)
6. Construction stage - Stakeholder Site Inspections

5.1 Moreland ESD Matrix

To assist in the implementation of the policy, a project implementation tool has been developed – the **Moreland ESD Matrix**. This tool is designed to integrate with existing Capital Works project workflows and during the design stages of a project enables project managers to:

- clearly scope project ESD requirements at project inception
- track compliance with ESD requirements by project architects and consultants
- incorporate critical hold points for detailed review of design documentation and specifications

Following final review and acceptance of tender documentation, the project specific Moreland ESD Matrix is to form part of the contract documentation package to enable contractors to understand and incorporate all ESD requirements in their tender responses.

Upon commencement of construction, the Contractor is to take ownership of Moreland ESD Matrix and demonstrate compliance with all requirements by submitting a completed Matrix to Council including any supplementary documentation required by specific targets.

5.2 Roles and Responsibilities

Roles and responsibilities and process flow for implementing this policy is outlined below:

Party	Role
Project Sponsor Manager developing budget bid	• For projects over $750,000, meet with ESD Officer and Capital Works Project Manager to determine scope and associated costs. Appoint an ESD representative to the Project Working Group.

Party	Role
	• For minor projects under $750,000 request an ESD representative to provide advice on project as part of the Project Working Group.
Project Manager Building Projects, Building Maintenance or Facilities Management Units	• Implement projects, works, and building services that comply with the Sustainable Buildings Policy. Seek advice from the nominated ESD representative on the following (as required): – Moreland ESD Matrix implementation – Specifications and technical notes – Design review – Tender document development to include the ESD Minimum Requirements – Tender review (for ESD elements) – Engagement of Independent Commissioning Agent
ESD Unit	• Nominate an ESD representative on request by the project manager and/or project sponsor. • Assist Capital Works Project Managers to scope Moreland ESD Matrix at the start of projects • Provide support implementing Moreland ESD Matrix as project progresses and at key project stages • Support the implementation of projects that comply with the Sustainable Buildings Policy on request by the Project Sponsor and/or Project Manager. • Support the implementation of works that comply with the Sustainable Buildings Policy by advising Panel Contractors on request.

NOTE: If during the course of project the scope of the project expands then the ESD minimum requirements for Capital Works must be consulted and incorporated to suit the expanded scope of the project.

6 MONITORING, EVALUATION and REVIEW

This policy will be monitored regularly to ensure its relevance in terms of community needs and expectations, Council goals, Council targets and statutory requirements.

Monitoring and Evaluation	Lead – ESD Unit Support – Manager Capital Works Planning and Delivery	Annual MEG report September
Reporting and Review	Lead – ESD Unit Support – Manager Capital Works Planning and Delivery	Annual MEG report September

7 DEFINITIONS

Term	Definition
Large project	For the purposes of this policy, a capital works project with a budget of $2Million or higher.
Environmental Sustainable Design (ESD)	ESD commonly includes achieving or exceeding ‘best practice’ standard for buildings, infrastructure, transport, landscaping and streetscapes.

Term	Definition
Sustainable Design Assessment in the Planning Process (SDAPP)	A framework for assessing sustainable design at the planning stage, that is currently in place in Moreland and other local governments in Victoria. Planning permit applicants are required to submit sustainable design information and meet best practice sustainable design standards, relative to the size and type of development.
Daylight Factor	A measure of indoor brightness of diffuse daylight within a space. It is defined as the ratio of the luminance of a point in a building to the unobstructed outdoor illuminance under the same sky conditions. It is usually measured at the height of the horizontal work plane. Some examples of acceptable mean daylight factors for various spaces include: 3% for conference rooms, 2% for offices, 1% for circulation areas. Acceptable daylight modelling software include Radiance, LumenMicro, DaySim etc. or similar methods
Daylighting Rules of Thumb	Simple equations for evaluating adequacy of daylight levels in a building developed by Harvard University including: Ensuring the window to wall ratio (WWR) required to achieve adequate daylight is below 80%. It is unlikely that a building with a vertical sky angle of less than 25 degrees can achieve adequate daylight. A vertical sky angle is the angle in the vertical plane between the centre of glass of the external window to adjacent obstructions (balconies, neighbouring buildings (existing, proposed, structure plans, whichever is most relevant). Ensuring room depth does not exceed 2 x window head height (WHH) to the floor and is appropriate to the room width, material reflectivity. It is unlikely that room depth would be more than 7 metres or the width less than 3.5 metres. Ensuring glazing provided to a space is sufficiently sized. As a rule glazing should be at least 10% of the total interior surfaces (ceilings, walls including windows, floors); this would be significantly more than the Building Code Requirement for windows to be sized to at least 10% of the floor area of the room. The Daylighting Rules of Thumb can be found at http://www.gsd.harvard.edu/research/gsdsquare/Publications/DiffuseDaylightingDesignSequenceTutorial.pdf
Independent Commissioning Agent (ICA)	**Independent Commissioning Agent (ICA)** The ICA is defined as a person who is: • An advocate for, and reports directly to, the project owner; • Independent of any consultant, contractor or sub-contractor organisation that has been involved in the design or installation of the nominated systems; and • 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.

Term	Definition
MUSIC Modelling	A model that predicts the performance of stormwater quality management systems using the licensed MUSIC software available for download at http://www.ewater.com.au/products/music/
STORM Rating	An assessment of stormwater runoff and on-site treatment against best practice targets, using the free STORM calculator, available online at http://storm.melbournewater.com.au/
JV3 Modelling	JV3 is a modelling approach for non-residential buildings to meeting Section J requirements of the Building Code of Australia (BCA).
U Value	A measure of heat transfer that is commonly used for windows. The lower the U-value, the lower the heat transfer (lower heat loss = more insulating power)
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.
R Value	A measure of heat transfer that is used for insulation. The higher the R-value, the lower the heat transfer (lower heat loss = more insulative value)
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.
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.
Stormwater	Stormwater is water created by precipitation that can soak into the soil (infiltrate), be held on the surface and evaporate, or runoff and end up in nearby streams, rivers, or other water bodies (surface water).
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
Permeable paving	Permeable paving is a paving material that enables water to pass through the paving materials. It can mean either a paved surfaced in which water passes through, or 'permeates', the space between the paving materials (often paving blocks or stones), as well as for surfaces paved with porous materials (such as gravel) in which water permeates the paving material itself. Permeable paving has a tendency to clog and this causes the permeability of the permeable paving to decease to the point where it is no longer permeable. Therefore it must be maintained to be effective.
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.

Term	Definition
Micro-generation	Small scale generation of electricity/heat power.
Ring Main	Pumped hot water circulation system.
Staged multi unit	Multiple instantaneous hot water booster interconnected.
Manifold array	Multiple hot water boosters connected by a common manifold.
Split System	Air conditioning with separate indoor and outdoor units.
Lux	Illuminance per area.

8 ASSOCIATED DOCUMENTS

- D17/345508 Sustainable Buildings Policy 2018 - Moreland ESD Matrix - BLANK PROJECT (as updated from time to time)
- D15/390644 Updated Indoor Thermal Comfort Policy 2016