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Introduction

Delivering sustainable and resilient buildings promotes better patient outcomes, higher employee satisfaction and productivity, lowers operating costs and emissions, and considers infrastructure resilience measures in response to climate change to maximise operational continuity and access to healthcare.

Climate change represents a fundamental threat to public health. Victoria is already experiencing significant impacts from events which are becoming more frequent and intense as a result of climate change. Therefore, it is critical that the health sector plays a central role in driving action on climate change, seeking solutions and supporting the community to adapt to its impacts.

New construction

New public health infrastructure works must be all electric. This is in alignment with the July 2023 government announcement for all new public buildings to be all electric, which also supports the Victorian Gas Substitution Roadmap to transition away from reliance on fossil fuels for energy.

Extensions and refurbishments

For projects that are extensions of an existing building or a refurbishment where the building is supplied by existing gas infrastructure, this infrastructure may be retained and connected into, if required, however the project must not introduce any new gas meters to the site.

Regional Health Infrastructure Fund sustainability requirements

In line with Victorian Health Building Authority's (VHBA) requirements for capital projects, minimum sustainability requirements and opportunities to support enhanced initiatives have been implemented in the Regional Health Infrastructure Fund (RHIF). In summary this:

- requires health services to complete a sustainability business-as-usual checklist and include in their Smarty Grants applications to demonstrate compliance with minimum requirements
- requires construction projects over \$5m to include a budget of 2.5 per cent of total construction cost for enhanced sustainability initiatives in their cost plan
- allows health services to access up to 2.5 per cent of total construction cost for enhanced sustainability initiatives for projects up to \$5m, where the project demonstrates the benefit of additional investment.

Refer to Appendix 3: Sustainability FAQs in the RHIF Guidelines for more guidance regarding sustainability requirements and opportunities for your project.

Further information and resources

Applicants are encouraged to refer to VHBA's Guidelines for sustainability in capital works for broader environmental sustainability principles and other initiatives that may be applicable.

The relevant checklist for your project type is to be completed and included in your grant application submission. Initiatives which are included in the proposal are to be marked "Yes". Some of the minimum requirements may not be applicable or feasible for your project type funded through RHIF. Where this is the case, please insert N/A in the right column for those not relevant within your project category.

Applicants should refer to the following resources in the preparation of grant applications and delivery of grants projects:

- [Guidelines for sustainability in health care capital works](https://www.vhba.vic.gov.au/guidelines-sustainability-capital-works) <<https://www.vhba.vic.gov.au/guidelines-sustainability-capital-works>>

Select project type:		Yes/No
Planning	<ul style="list-style-type: none"> • Feasibility • Schematic design 	
Equipment / Procurement	<ul style="list-style-type: none"> • Fixtures, fittings, and equipment • Motor vehicle (bush nursing centres only) 	
New construction, refurbishment, or infrastructure upgrade works	<ul style="list-style-type: none"> • New construction • Refurbishment • Engineering Infrastructure Works (e.g. engineering plant & equipment, electrical work, generators, Heating Ventilation and Air Conditioning) • DDA & Universal Access Works • Client meal preparation 	

Planning

Standard environmental sustainability initiatives		Included (Yes or N/A)
Indoor environment quality		
Design and internal layout to provide daylight for occupied functional areas (all areas likely to be occupied for at least one continuous hour per day).		
Internal layout to reduce excessive solar heat gain for patient areas.		
Inclusion of internal stairs to promote internal staff and patient movement, noting requirements for universal design.		
Energy efficiency		
Orient and design the building, within site constraints, so that as close as possible to 100 per cent of the north façade is shaded at the noon solstice and there is minimal glazing (with shading) on the west façade.		
Maximise shading of northern and western façades from existing trees and neighbouring buildings.		
Maximise use of directly accessible stairs through location and design.		
Design of skylights to harvest daylight in single storey buildings and top floors of multi-storey buildings within transit routes and stairs must include appropriate insulation properties to minimise thermal heat gain and or heat loss.		
Investigate viability of commercial scale heat pumps for domestic hot water for sites greater than 10,000 sqm.		
Design out inefficient thermal bridging across floor plates, walls and roofing. Examples of thermal bridging include cantilevered structures with no thermal break (such as balconies and wing walls), steel framed walls and roofs with no thermal break.		
Lighting		
Design and take advantage of natural light in new buildings to minimise the use artificial lighting during daytime working hours.		
Metering		
A metering and monitoring strategy to be provided, describing the water and energy sub-metering strategy for the project, including instruction for data collection and analysis and an integration control strategy between building services disciplines. Metering to form part of handover materials to the operator.		
On-site Renewable generation		
At least 60 per cent of the roof space is to be designed for the installation of solar, including: <ul style="list-style-type: none"> continuous roof areas of greater than 20 square meters roof top systems to be designed to minimise shading from trees, HVAC units, vents, pipes, ventilation systems, skylights, mobile phone masts, parapets or other architectural design features north, east and west facing including any azimuth angles in between (with plus or minus 10-degree tolerance) roof pitch angles of 25 degree or less are preferred for rooftop systems installations preference for tin roof finishes rather than roof tiles installation of solar preference for lower storey buildings (easier access for install and maintenance) where they will not be overshadowed by future development 		

Standard environmental sustainability initiatives	Included (Yes or N/A)
Water management	
Include water-sensitive urban design, such as swales and biofiltration to manage stormwater run-off.	
Design landscaping to be water efficient, including use of mulching, plant selection and water-efficient irrigation system, comprising subsoil drip systems and automatic timers with rainwater or soil moisture sensor over-ride.	
Materials specification and selection	
Design for re-use of existing structures or facilities on-site, where feasible.	
Adopt and promote the use of standard material sizes and components in design and fit-out.	
Cross laminated timber (CLT) structure options to be considered during design.	
Waste and resource recovery	
Provide a baler in the loading dock and space provision of 6 square meters.	
Provide an additional 10 square meters in the loading dock for storage and management of recycling bins.	
Provide an additional 10 square meters in the loading dock for a compactor in buildings greater than 10,000 square meters.	
Ecology and landscaping	
Avoid building on land that is: <ul style="list-style-type: none"> • prime agricultural value • below the 100-year flood operations location • subject to erosion, bushfire, or landslides • land of recognised heritage or conservation value 	
Deliver a net biodiversity increase to the site from landscaping, using locally indigenous flora and planting for habitat and enhancing local wildlife, including invertebrates.	
Provide habitat corridor links where the site is close to conservation areas and natural habitats.	
Maximise use of sensory and well-being gardens for interaction with staff, visitors and patients/residents.	
Maximise use of outdoor spaces and activities for patient rehabilitation.	
Transport	
Incorporate connectivity to transport nodes within the site, adjacent to it and surrounding (bike paths, bike storage, car parks, public transport nodes, pedestrian networks) following universal design principles.	
Health service to develop an integrated transport plan (ITP) for greenfield projects over 10,000 square meters consolidating all behavioural and infrastructural transport measures implemented on site and recommendations for future improvements.	
Provide secure and conveniently located on-site bicycle parking for staff and visitors and 'after-trip' facilities for staff in line with provisions in clause 52.34 of the Victorian Planning Provisions (VPP), including where exemptions exist. Buildings are to meet the requirements for 'Hospitals' or 'Medical Centres', whichever is the most appropriate. Healthcare facilities located in Melbourne and regional centres are to exceed VPP clause 52.34 requirements by at least 20 per cent.	

Standard environmental sustainability initiatives	Included (Yes or N/A)
Provide 25 per cent of total parking spaces designed and labelled for small cars or motorcycles and mopeds (or both), hybrids, electric cars and alternative-fuel vehicles and carpool vehicles in preferential locations with adequate signage or markings.	
Future-proof carpark infrastructure to enable charging stations to be installed in line with DoH's fleet management guide, Planning for electric vehicles in the health sector. < https://www.health.vic.gov.au/publications/fleet-management-improving-fleet-efficiency-in-the-health-sector >	

Equipment and procurement

Standard environmental sustainability initiatives		Included (Yes or N/A)
Indoor environment quality		
Use of electrolysed water systems or equivalent for surface cleaning in commercial kitchens.		
A minimum of 30 per cent by cost of loose furniture to be third-party certified by a recognised environmental certification scheme, such as GECA, Green Rate, Eco specifier, SMaRT 4.0, Green Tick or equivalent.		
Energy efficiency		
Air conditioners (single phase, non-ducted), clothes washers, clothes dryers, dishwashers, televisions, refrigerators, freezers, computer monitors and pool pumps to have a minimum 5-star energy rating.		
Water management		
Water using appliances, such as dish washers and washing machines to be equivalent to 4.5-Star WELS rating or above.		
Materials specification and selection		
Re-usable fittings compliant to current performance requirements, furniture and workstations from vacated and/or demolished premises to be re-used or donated to third party uses.		
Transport		
Provide tele- and video-conferencing facilities for staff use. Encourage adoption of tele-medicine where budget allows.		

New construction, refurbishment, or infrastructure upgrade works

Standard environmental sustainability initiatives		Included (Yes or N/A)
Systems, processes, and guidance		
The building is to be commissioned in compliance with the Chartered Institute of Building Services Engineers (CIBSE) commissioning code M.		
A building user guide is to be provided to the operator detailing: <ul style="list-style-type: none"> energy and environmental strategy for the building modelled performance targets building monitoring system details of sustainable features and any operational requirements. 		
Provide VHBA, via email to edms@health.vic.gov.au, the environmental data management system (EDMS) requirements template (see Appendix 5 of VHBA's sustainability guidelines) if the floor area, building use, or energy supply of the asset changes.		
Post-occupancy evaluations of energy and water targets and waste measures against actual building performance within six months of practical completion for new construction projects. Actions required to address any identified discrepancies and addressed through defects and liability.		
Indoor environment quality		
Internal layout to reduce excessive solar heat gain for patient areas.		
Treat doorways and other external openings to manage prevailing winds and draughts.		
Inclusion of internal stairs to promote internal staff and patient movement, noting requirements for universal design.		
Use of electrolysed water systems or equivalent for surface cleaning in commercial kitchens.		
Locate outside air intakes away from major roads, loading docks and waste collection to reduce contaminants from entering the building.		
Design for a potential wider and more variable internal temperature band (such as 19 to 26° Celsius) adjusted for seasonal variation, unless contraindicated for clinical or operational reasons.		
All paints, adhesives, sealants, wall and ceiling coverings to meet the following total volatile organic compounds (TVOC) in g/L of ready to use products: <ul style="list-style-type: none"> Interior wall and ceiling paint – 5g/L General purpose adhesives and sealants, trims, varnishes, wood stains, primers, sealers and prep coats – 75g/L One and two pack performance coating for floors, acoustic sealants, architectural sealant, waterproofing membrane and sealant, fire retardant sealants and adhesives, structural glazing adhesive, wood flooring and laminate adhesives and sealants – 250g/L Carpets: 0.5mg/m2/hour under ASTM D5116 test protocol for Total VOC; 0.05mg/m2/hour under ASTM D5116 test protocol for 4-PC All plywood, particleboard, MDF and LVL to meet formaldehyde limits of no more than 1mg/L All high pressure and compact laminates to meet formaldehyde limits of no more than 0.1 mg/m2hr. 		

Standard environmental sustainability initiatives	Included (Yes or N/A)
Acoustic treatment to meet best practice guidelines for noise levels, reverberation and acoustic separation as per current AS/NZS 2107:2016 standard.	
A minimum of 30 per cent by cost of loose furniture to be third party certified by a recognised environmental certification scheme, such as GECA, Green Rate, Eco specifier, SMaRT 4.0, Green Tick or equivalent.	
Glare control for all occupied spaces unless it can be demonstrated that glare is eliminated by external shading features or glazing treatments. If blinds are installed, they are to be able to be controlled by affected occupants and have a visual light transmittance (VLT) of less than 5 per cent.	
Energy efficiency	
Maximise shading of northern and western façades from existing trees and neighbouring buildings.	
Maximise use of directly accessible stairs through location and design.	
All window systems to be double glazed and thermally broken with light-coloured window frames.	
Design of skylights to harvest daylight in single storey buildings and top floors of multi-storey buildings within transit routes and stairs must include appropriate insulation properties to minimise thermal heat gain and or heat loss.	
Provide operable windows for natural ventilation in sub-acute patient and administration areas, where feasible.	
Design out inefficient thermal bridging across floor plates, walls and roofing. Examples of thermal bridging include cantilevered structures with no thermal break (such as balconies and wing walls), steel framed walls and roofs with no thermal break.	
<p>For non-24-hour theatres, implement a set-back mode for when the operating theatres are not in use. In set-back mode the operating suite will:</p> <ul style="list-style-type: none"> • set to minimum outside air • widen temperature dead band to 14 to 30° Celsius • always maintain full humidity control within the limits set in Engineering guidelines for healthcare facilities: Volume 4 –mechanical engineering. 	
Design outside air cooling options to server, communication rooms and data centres with supplementary computer room air conditioning unit (CRAC) air treatment for support and higher temperature operating days.	
All below-ground car parks to have carbon monoxide monitoring and variable speed drive (VSD) fan controls.	
Install minimum 0.95 power factor correction systems for building services.	
Use of heat pump or high efficiency equivalent technology to provide domestic hot water for sites below 10,000 sqm.	
All boiling water units to have operational timer controls installed and set to Monday to Friday 7 am to 7 pm, unless otherwise required, and not require supplier or specialist service engineer expertise to change time settings.	
Air conditioners (single phase, non-ducted), clothes washers, clothes dryers, dishwashers, televisions, refrigerators, freezers, computer monitors and pool pumps to have a minimum 5-star energy rating.	
Over door air heaters or curtains to be designed out.	

Standard environmental sustainability initiatives		Included (Yes or N/A)
Lighting		
Internal artificial light sources to have a minimum colour rendering index (CRI) of 80.		
External and internal artificial lighting to employ occupancy sensors, lux level sensors, lux/occupancy combined sensor or BMS transition dimming and shutdown as appropriate to building type and work area use. Include local control for light zones of up to 75 sqm.		
Artificial lighting efficiency benchmark must not exceed the NCC-BCA minimum requirements per square meter averaged across the building net floor area (at maximum wattage).		
Glare from lamps to be managed, for example, by: <ul style="list-style-type: none"> fitting bare lamps with baffles, translucent diffusers complying with clause 8.3.4 of AS/NZS 1680.1-2006, or not exceeding the maximum Unified Glare Rating (UGR) values listed in Table 8.2 of AS/NZS 1680.1-2006, calculated in line with Clause 8.3.3. 		
LED technology to be used for all lighting unless clinical practices dictate specialist lighting solutions. Flicker from LED lights to be managed so as not to affect residents.		
External lighting, including architectural, public areas and carparking to use LED lighting with lower activity dimming and day light sensors (dusk to dawn). Architectural lighting not required for wayfinding or public safety is not to operate between the hours of 12.00 am and 6.00 am.		
Metering		
Metering to be designed in line with 'Good practice' in Appendix A of DoH's Guidance note on implementing effective energy and water metering systems. < https://www.health.vic.gov.au/publications/guidance-note-on-implementing-effective-energy-and-water-metering-systems >		
All metering connections (sub-metering) to be installed and commissioned to report to the building management system, or dedicated monitoring platform in the engineering or facilities management office (or both). Metering to be able to provide real-time notifications to engineering or facilities management staff (or both) of use outside abnormal parameters.		
Heating and cooling		
Reverse cycle split system air-conditioning units to be within one star of highest available for output (kW).		
Building ventilation and heat rejection vents to be located near or next to hot water and heating heat pump systems to improve air-on conditions to heat rejection plant.		
On-site Renewable generation		
At least 60 per cent of the roof space is to be designed for the installation of solar, including: <ul style="list-style-type: none"> continuous roof areas of greater than 20 square meters north, east and west facing including any azimuth angles in between (with plus or minus 10-degree tolerance) roof pitch angles of 25 degree or less are preferred for rooftop systems installations preference for tin roof finishes rather than roof tiles installation of solar preference for lower storey buildings (easier access for install and maintenance) where they will not be overshadowed by future development. 		
Allowance within the design of the electrical infrastructure, including circuit breakers or space in the main switch board (or both) to enable retrofit of solar photovoltaics without requiring upgrade to electrical infrastructure.		
Adequate weather protected wall space suitable for the location and installation of inverters.		

Standard environmental sustainability initiatives	Included (Yes or N/A)
Where safe access and/or harness points for working at heights are being installed for other plant, the design is to allow expansion for future use for the solar panels.	
Solar photovoltaic arrays are to be sized to match the hospitals base load and avoid export to the grid due to diminishing returns from over-sized arrays.	
All solar arrays are to be configured for automatic export of generation data to the department's environmental data management system (EDMS) as detailed in Appendix 3 of the Guidelines for sustainability in health care capital works.	
Water management	
Install tapware with maximum flow rate equivalent to 6-Star WELS rating or above in all bathrooms, ensuites and general amenity areas.	
Install dual flush toilets with flush rates equivalent to 4-Star WELS rating or above.	
Install showers with maximum flow rate equivalent to 3-Star WELS rating or above.	
Urinals for staff and visitors to be fitted with demand driven or smart demand operation and have flush rates equivalent to 5-Star WELS rating or above. No cyclic flushing urinals to be installed.	
Patient amenities taps to include flow rates equivalent to 6-Star WELS rating or above.	
Drinking water fountains to be installed in internal and external public areas to minimise use of bottled water.	
Water using appliances, such as dish washers and washing machines to be equivalent to 4.5-Star WELS rating or above.	
Preference cooling of equipment such as CSSD or compressors with chilled water and heat exchangers or non-potable water where services are in close proximity. Use of non-potable water to be in line with Guidelines for water reuse and recycling in Victorian healthcare facilities: non-drinking applications.	
Include water-sensitive urban design, such as swales and biofiltration to manage stormwater run-off.	
Design landscaping to be water efficient, including use of mulching, plant selection and water-efficient irrigation system, comprising subsoil drip systems and automatic timers with rainwater or soil moisture sensor over-ride.	
Provide rainwater tanks to collect water from roof tops, reverse osmosis (dialysis) and other areas where flows justify. Collected water to be treated and used for landscape irrigation and toilet flushing in staff and public areas. Use of non-potable water to be in line with the Guidelines for water reuse and recycling in Victorian healthcare facilities: non-drinking applications.	
Wash-down hoses to be controlled by commercial high-pressure water efficient trigger nozzles and connected to rain, or reclaimed water tanks.	
Materials specification and selection	
Re-usable fittings compliant to current performance requirements, furniture and workstations from vacated and/or demolished premises to be re-used or donated to third party uses.	
Minimise use of paint or finishes on exterior surfaces.	
Use of post-consumer waste or post-industrial waste, such as recycled aggregate, fly ash and silica fume for concrete and post-consumer recycled content or re-used steel. A proportion of recycled content to be used in the following:	

Standard environmental sustainability initiatives	Included (Yes or N/A)
<ul style="list-style-type: none"> tarmacked areas, including on-site access roads, at-grade carparks and footpaths non-structural concrete, including kerbing and footpaths, with concrete aggregates to contain a minimum 15 per cent recycled or substitute materials fly ash, crushed recycled aggregate car park wheel-stops, landscaping elements, decking, bollards and fixed outdoor furniture. 	
Maximise use of locally produced building materials, construction workers and facilities.	
All timber (structural and architectural) to be Forest Stewardship Council (FSC) certified or recognised equivalent.	
Preference carpet squares with a recycled content for ease of replacement.	
Preference stainless steel, concrete or bamboo bench tops in food preparation areas. Stone products are to be avoided. Composite stone products are banned for use.	
Preference for recycled content for plumbing and drainage reticulation pipework.	
Waste and resource recovery	
95 per cent by weight target for demolition and construction materials (excluding hazardous waste) to be re-used or recycled (or both).	
Provide a baler in the loading dock and space provision of 6 square meters.	
Provide an additional 10 square meters in the loading dock for storage and management of recycling bins.	
Commingled, paper and cardboard, confidential paper, e-waste and organics recycling streams to be provided.	
Ecology and landscaping	
Maximise retention of existing ecological resources, contiguous ecosystems networks and native vegetation during construction for project delivery.	
Maintain balance of topsoil and fill on site, such that minimal topsoil is removed from site. Topsoil is not to be sent to landfill.	
Deliver a net biodiversity increase to the site from landscaping, using locally indigenous flora and planting for habitat and enhancing local wildlife, including invertebrates.	
Maximise use of sensory and well-being gardens for interaction with staff, visitors and patients/residents.	
Maximise use of outdoor spaces and activities for patient rehabilitation.	
Transport	
Provide tele- and video-conferencing facilities for staff use. Encourage adoption of tele-medicine where budget allows.	
Provide wayfinding to direct staff, patients and visitors to bike and pedestrian networks and public transport, following universal design principles. Work with local council to provide wayfinding from public transport nodes to the healthcare facility.	
Provide secure and conveniently located on-site bicycle parking for staff and visitors and 'after-trip' facilities for staff in line with provisions in clause 52.34 of the Victorian Planning Provisions (VPP), including where exemptions exist. Buildings are to meet the requirements for 'Hospitals' or 'Medical Centres', whichever is the most appropriate. Healthcare facilities located in Melbourne and regional centres are to exceed VPP clause 52.34 requirements by at least 20 per cent.	

Standard environmental sustainability initiatives	Included (Yes or N/A)
Provide internal charging points with appropriate berth for motorised mobility devices and investigate viability of charging points for e-bikes and scooters.	
Provide 25 per cent of total parking spaces designed and labelled for small cars or motorcycles and mopeds (or both), hybrids, electric cars and alternative-fuel vehicles and carpool vehicles in preferential locations with adequate signage or markings.	
Future-proof carpark infrastructure to enable charging stations to be installed in line with DoH's fleet management guide, Planning for electric vehicles in the health sector. < https://www.health.vic.gov.au/publications/fleet-management-improving-fleet-efficiency-in-the-health-sector >	
Emissions to land, water, and air	
Install noise attenuation on engineering plant and other noise sources to meet required noise emission standards. Location of engineering plant to be considerate of local noise sensitive receptors, including residential housing and other community facilities.	
Avoid ozone-depleting chemicals by sourcing recognised alternatives with low ozone-depleting potential (ODP), for example, hydrocarbon gases in air conditioning and thermal insulants.	
No lighting to be directed beyond site boundaries or upwards without falling directly onto a surface for illumination, being mindful of safety and 'ambience' requirements.	
Non-blown insulation (thermal, pipe, fire, acoustic) to have a global warming potential (GWP) of less than or equal to 5. Blown insulation to preference low GWP products.	
Where refrigerant systems have a charge of over 3 kilograms or refrigerant with a GWP over 5 (or both), leak protection and leak detection systems are to be installed.	

To receive this publication in an accessible format, email [Regional Health Infrastructure Fund](mailto:RHIF.Applications@health.vic.gov.au) <RHIF.Applications@health.vic.gov.au>

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