EAGA
EASTERN ALLIANCE FOR GREENHOUSE ACTION

Resilient Emergency Relief Centres

Project Summary June 2021

Objectives

- Assess the vulnerability of selected Emergency Relief Centres (ERC) to climate change impacts
- Identify and document opportunities to improve the resilience of the facilities to climate change via targeted upgrades
- Build the capacity of council facility managers to address climate change risks in their day to day asset management planning and processes

Figure 1: Whitehorse Town Hall ERC

Approach

- Appoint dedicated project manager to work across eight participating councils
- Engage with relevant teams including asset and facilities, emergency management and sustainability
- Conduct Building Vulnerability Assessments (BVA) at 23 sites across the region
- Vulnerabilities documented and adaptation measures identified with indicative costings
- Reports provided to each participating council, with short term and longer term recommendations

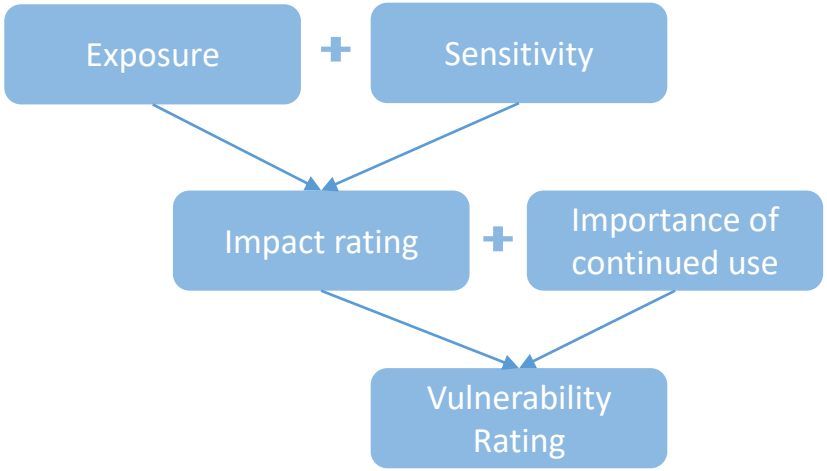

Figure 2: Vulnerability assessment approach

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Key Building Vulnerability Findings – top 5

Functional Requirement	Building component	Vulnerability description	Risks	Adaptation measures	Adaptation measure Av $/m^2
Power	Electricity - grid & building	Electricity grid supply failures/blackouts	No electricity Safety compromised (no lighting, air conditioning, IT services, communications) Building continuity is lost/restricted	Investigate options for back-up supply and install/connect best option	$8.13
Thermal comfort	Cooling equipment	Extreme heat/higher temperatures	Increased wear and tear, shorter life, high running costs, high greenhouse gas emissions, inability to achieve safe indoor temperature	Shade equipment, improve thermal efficiency of building envelope	$15.52
	Cooling& heating equipment	Extreme wind & impact by vegetation	Damage to equipment, function and service continuity	Manage vegetation risks	
	Roofs, external walls, floors, windows and doors	Higher outdoor temperatures being transferred into building via conduction and/or air infiltration	Inability to achieve safe indoor temperature, function and service continuity	Improve thermal efficiency of building envelope	

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Key Building Vulnerability Findings – top 5

Functional Requirement	Building component	Vulnerability description	Risks	Adaptation measures	Adaptation measure Av $/m^2
Structural performance	Roofs, external walls, windows and doors	Higher outdoor temperatures leading to increased expansion of materials	Structural failure, safety, function and service continuity	Review structural integrity with a view to manage climate change vulnerabilities	$5.42
	Roofs, external walls, windows and doors	Extreme winds	Structural failure, safety, function and service continuity		
	Foundation and ground slabs	Heavier rainfall	Structural failure, function and service continuity		
	Foundation and ground slabs	Lower average rainfall	Structural failure, function and service continuity		
	Foundation and ground slabs	Extreme winds	Structural failure, function and service continuity		

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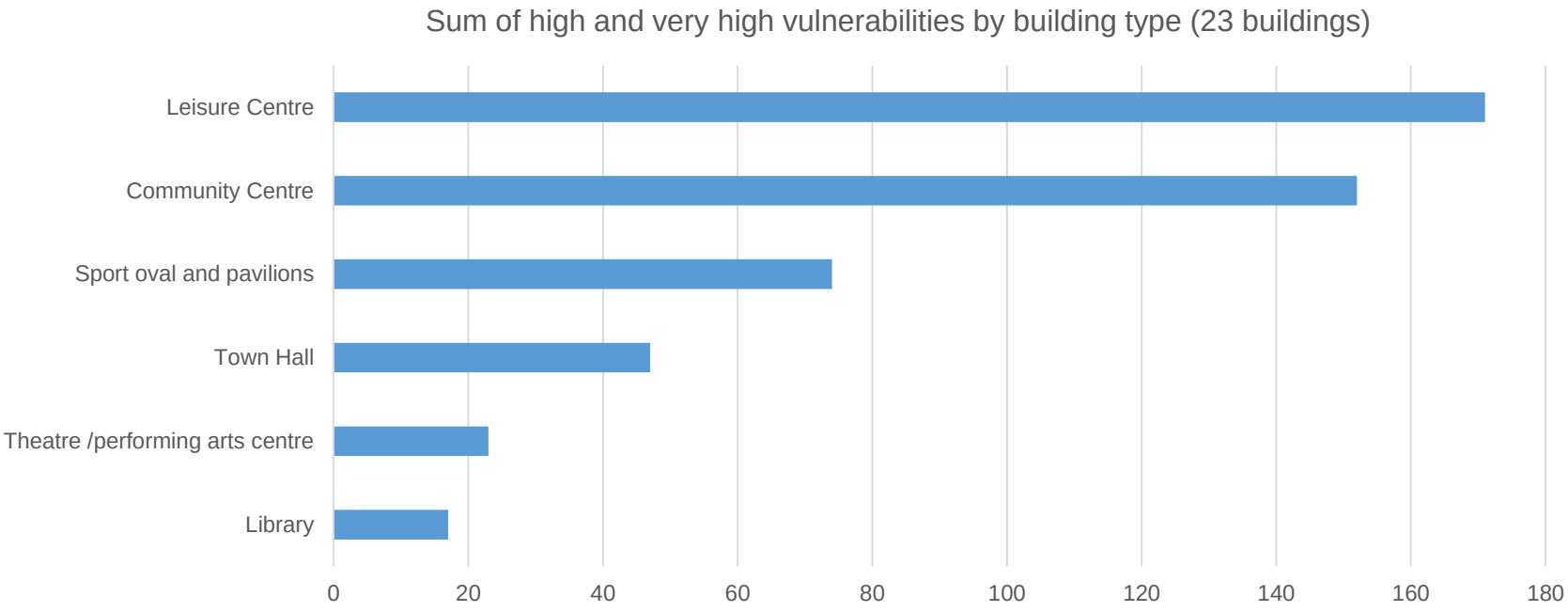
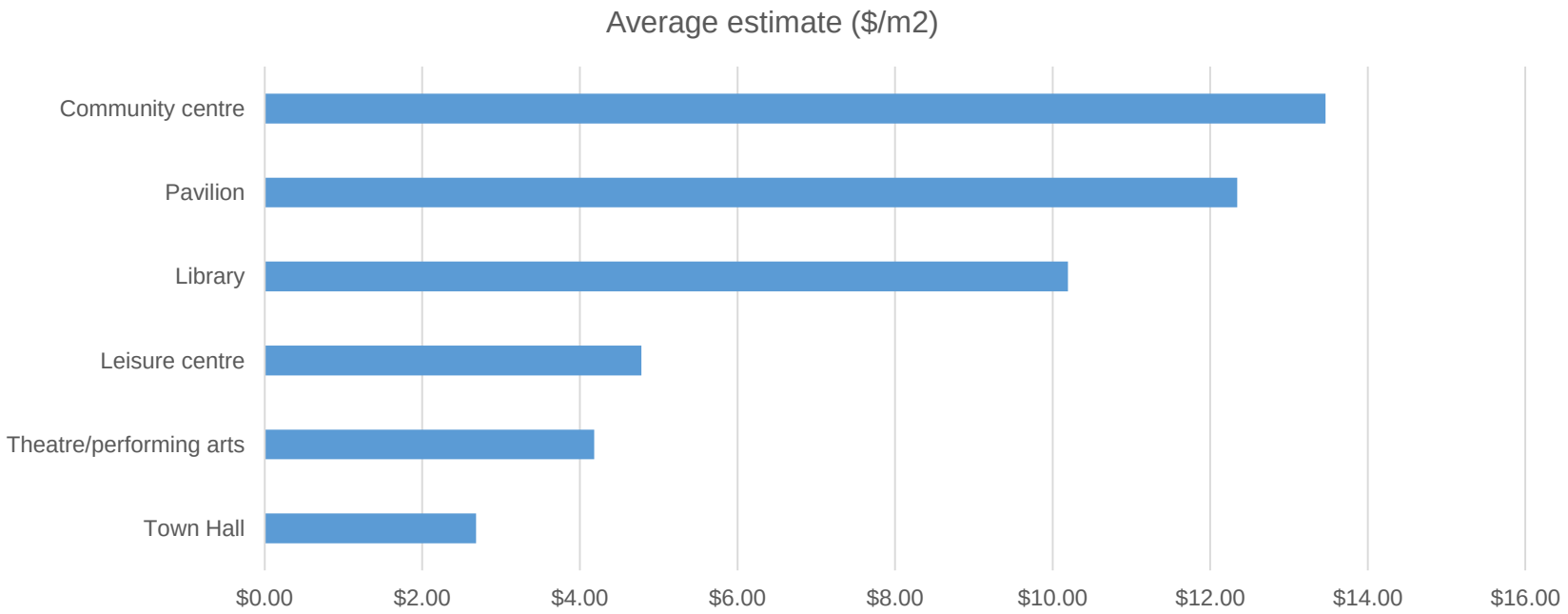
Key Building Vulnerability Findings – top 5

Functional Requirement	Building component	Vulnerability description	Risks	Adaptation measures	Adaptation measure Av $/m^2
Indoor air quality	Indoor air quality	Dust/smoke movement into building	Poor/unhealthy indoor air quality Dust accumulates inside and makes floor slippery/unsafe, requiring cleaning, function and service continuity	Manage threat either at source or via pathway into building	$2.15
Weather proofing	Roofs, drainage and stormwater systems	Heavy rainfall	Structural failure Water leaks into building, compromising structure, health and safety, usability, requiring cleaning/make safe	Review and identify specific risks and risk management plan at each site	$2.81

Most at-risk facilities



Indicative adaptation costs by building type



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Findings

- The BVA process enables councils to act on climate change risks in an informed way. Under current legislation (Local Government Act 2020, Climate Change Act 2017), councils have a *'duty of care'* and failure to act on known risks may leave councils open to claims of negligence
- Council buildings are at risk from climate change related events. These risks are more extreme when the sites are activated as ERCs versus standard building use. This is particularly acute when ERCs are required in heat waves events and cannot maintain safe indoor temperature while providing refuge to vulnerable community members
- Buildings are likely to be safer, more comfortable, more affordable to operate (and lower greenhouse gas emissions) following implementation of the recommended adaptation measures
- Simplifying and streamlining the BVA framework will be necessary before it can be effectively mainstreamed in asset management practices in councils

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Recommendations

- Improve adaptation costs estimates by securing detailed quotations for each proposed measure
- Implementation of adaptation measures with clear co-benefits (i.e. improving thermal comfort reduces operating costs) should be bundled with other measures with less easily quantifiable co-benefits
- Seek to fund the upgrades through Council's existing asset renewal budget and/or pursue additional budget bids in the coming financial cycle
- Apply the provided "BVA lite" checklist into ongoing condition assessment processes
- Integrate targets/KPIs into existing asset management plans to address the reduction of climate risks/vulnerabilities in council buildings

Acknowledgements

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- Stakeholder Committee for the Regional Adaptation Strategy For Greater Melbourne: Fran McDonald (WAGA), David Meiklejohn (NAGA), Karen Gardham (NAGA), Dominique La Fontaine (SECCCA), Kate Berg (City of Melbourne)
- The Building Vulnerability Assessment framework was originally developed by Arup from the City of Whitehorse (2013) and updated for EAGA and NAGA in 2015 for the Future Asset Forum initiative