FROM HERE TO THERE
Our Projects
Focus Area Measurement Guidelines

CONTENTS

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What is measured?	CO^2 emission
How is it measured?	Metered for energy end use
How often and when is it measured?	Annually, post-occupancy
Who measures it?	Facilities Management manual reading or Building Management System (BMS)
Monitoring and Measuring Process	To cover the energy supply/usage of the following: Incoming energy input (utility supply): • On-site energy generation • Major HVAC end uses • Vertical transportation • Back-up generator • Miscellaneous fans • Lighting and Power • Any other major energy consumptions for building operation
Best Practice Reference Documents	• The Rules Metering and Monitoring Guide v1.2 December 2020, NABERS • CIBSE TM39 Building Energy Metering

What is measured?	Waste stream quantities by mass (organic, recycling, e-waste, mixed, etc.)
How is it measured?	1. Weighing the different waste streams 2. Waste generation rate per month
How often and when is it measured?	Monthly, post-occupancy
Who measures it?	Facilities Management / Waste Management Contractor
Monitoring and Measuring Process	Measure different waste streams: • Organic • Recycling (paper, glass, plastics) • E-waste • Re-use • General mixed waste etc.
Best Practice Reference Documents	Guidelines for Waste Management in New developments, City of Sydney

What is measured?	Embodied carbon
How is it measured?	Life Cycle Assessment carbon emissions calculation
How often and when is it measured?	Life Cycle Assessment carbon emissions calculation
Who measures it?	Sustainability Consultant
Monitoring and Measuring Process	Life Cycle Assessment using accurate data drawn from local Environmental Product Declaration certificates (EPDs) wherever possible
Best Practice Reference Documents	EN 15978:2011 Sustainability of Construction Works - Assessment of environmental performance of buildings - Calculation method

What is measured?	Construction waste and reuse
How is it measured?	1. Waste generation rate 2. % of reuse 3. % of sustainable materials used
How often and when is it measured?	Monthly, during construction stage
Who measures it?	Head Construction Contractor / Waste Management Contractor
Monitoring and Measuring Process	Cumulative waste reporting generated from the monthly waste reports provided by the waste contractor over the entire duration of construction and demolition works
Best Practice Reference Documents	Green Star Construction and Demolition Waste Reporting Criteria, GBCA

What is measured?	• Potable water • Stormwater • Greywater • Recycled water
How is it measured?	Water meters
How often and when is it measured?	Monthly
Who measures it?	Facilities Management manual reading or Building Management System (BMS)
Monitoring and Measuring Process	To cover water supply / usage of the following: • Incoming Potable water • Other off-site water supply sources (e.g. district non potable supply) • Harvested stormwater • Greywater • Other recycled water
Best Practice Reference Documents	• The Rules- Metering and Monitoring guide v1.2 December 2020, NABERS • Water Metering & Servicing guidelines version 8.1-2020, City West Water, Yarra Valley Water, South East Water

What is measured?	Modes of travel and associated carbon emissions
How is it measured?	Post-occupancy survey by occupants/residents
How often and when is it measured?	Annually, post-occupancy
Who measures it?	Facilities Management
Monitoring and Measuring Process	Succinct, digital 5 minute surveys to enable quick data collection
Best Practice Reference Documents	Australian Government National Carbon Offset Standard for Buildings

What is measured?	Native flora and fauna
How is it measured?	Ecologist to be appointed — measure biodiversity before and after development to assess progress against targets
How often and when is it measured?	1. Baseline survey prior to development 2. Annually, as part of Biodiversity Management Plan
Who measures it?	Ecologist
Monitoring and Measuring Process	On-site biodiversity survey
Best Practice Reference Documents	• Handbook of Biodiversity Methods, Survey, Evaluation and Monitoring, Cambridge University Press • Ecological Census Techniques: A Handbook, Cambridge University Press • Guidelines for Carrying Out a Survey, Department of Planning, Industry and Environment NSW

What is measured?	Thermal comfort
How is it measured?	• Post-occupancy survey • Hours of overheating temperature monitoring
How often and when is it measured?	• Annually • Monthly, where available
Who measures it?	• Facilities Management • Building Management System (BMS) data or specialist peak summer monitoring program
Monitoring and Measuring Process	• Carry out survey for key occupied spaces including questions around the experience of summertime comfort • Gather BMS data from key occupied spaces over summer months to evaluate hours of overheating. • Alternatively, implement a program of temporary summertime temperature monitoring using data loggers installed into key occupied spaces
Best Practice Reference Documents	• Green Star Performance Guidelines • NABERS Indoor Environment Guide

What is measured?	Indoor air quality
How is it measured?	• CO2 sensors <800ppm or <700ppm • Particulate matter, formaldehyde, TVOCs
How often and when is it measured?	• Daily / Monthly • One-off on-site measurement
Who measures it?	• Building Management System (BMS) where CO2 monitoring available • Internal environmental monitoring specialist
Monitoring and Measuring Process	• Gather BMS data from key occupied spaces to evaluate air quality throughout the typical day. • Implement a program of on-site monitoring using hand held instruments, or alternatively install monitoring devices for temporary period
Best Practice Reference Documents	• Green Star Performance Guidelines • NABERS Indoor Environment Guide

What is measured?	Daylighting and visual comfort
How is it measured?	Using hand-held meters to assess lux levels
How often and when is it measured?	One-off, on-site measurement
Who measures it?	Facilities Management team or Internal environmental monitoring specialist
Monitoring and Measuring Process	Implement a program of on-site monitoring using hand held instruments
Best Practice Reference Documents	Green Star Performance Guidelines

What is measured?	Acoustic comfort
How is it measured?	Internal noise levels sound power level (dB) Reverberation time (non-residential) Impact Noise Transfer (dB LnT,w)
How often and when is it measured?	One-off, on-site measurement, post occupancy
Who measures it?	Acoustic Consultant
Monitoring and Measuring Process	A selection of representative spaces must be justified and must consider how the spaces are considered to be the most conservative with respect to both internal, and external noise sources.
Best Practice Reference Documents	• Green Star Buildings • AS/NZS 2107:2000 Acoustics - Recommended design sound levels and reverberation times for building interiors • ISO 16283-2:2018 Acoustics — Field measurement of sound insulation in buildings and of building elements — Part 2: Impact sound insulation

What is measured?	Biophilic connection to nature
How is it measured?	Area in m^2 of plant cover
How often and when is it measured?	Annually, as part of Biodiversity Management Plan
Who measures it?	Ecologist
Monitoring and Measuring Process	On-site biodiversity survey
Best Practice Reference Documents	Not applicable

What is measured?	Targets to be defined in more detail for each particular project according to the specific social context for the development
How is it measured?	To be determined
How often and when is it measured?	Annually
Who measures it?	Facilities Management
Monitoring and Measuring Process	To be determined
Best Practice Reference Documents	Not applicable

What is measured?	For specific innovation options where feedback is required for future projects, the following will be measured: • Confirmed capital costs • Actual running costs
How is it measured?	• Confirmed contractors costs per system • Actual running costs taken from utility bills and maintenance contracts
How often and when is it measured?	Annually, post-occupancy
Who measures it?	Facilities Management
Monitoring and Measuring Process	• Collect utility bill data and maintenance billing related to the specific system that is the focus of post-occupancy study • For innovation projects, consider alignment with University research institutions
Best Practice Reference Documents	Not applicable