

UNSW
Material Science
Section-J Scope

COMMERCIAL-IN-CONFIDENCE

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Team Catalyst

ACN 114 572 084

"Driving Sustainability through Teamwork"

e: pcthomas@teamcatalyst.com.au

m: 0417 405 478

The Material Science building project at UNSW is a new development that meet the university's sustainability criteria. An essential part of an energy efficient building is the building envelope. In this regard, the National Construction Code (NCC) has minimum mandatory performance requirements for external walls, partitions between conditioned and unconditioned spaces, floors and roofs. There are also stringent performance requirements for window systems; to be met by each orientation at each level. This method of compliance is called "deemed-to-satisfy".

The NCC has another method of compliance, the Alternate Verification JV3 method, an integrated, whole building energy simulation modelling approach that allows for trade-offs between the opaque building envelope, glazing systems and complex shading systems. Compliance is achieved by developing a "reference" building identical in geometry to the proposed design, and with attributes that just comply with the deemed-to-satisfy requirements of the building envelope. A whole building energy simulation analysis with this reference configuration provides an annual energy budget that must be equalled or bettered in the proposed design.

The proposed design for the Material Science building is to have glazed curtain wall systems and vertical shading elements and the JV3 method is considered more appropriate for testing design compliance. The Material Science building is to be developed to have a higher level of sustainability than the minimum mandatory requirements of the NCC, and this is to be reflected in the design of the building envelope and it's other energy systems. The curtain wall facade is to be specified to be made up of high performance insulated glass units (IGU) which will improve thermal comfort for occupants, improve the building's energy efficiency (and reduce greenhouse emissions). Shading elements on the sun facing facings (east, west and north) are being designed to reduce solar energy falling on these facades.

Team Catalyst will work with the architect and the facade consultant to ensure that the final design of the building envelope will meet and/or exceed the compliance requirements of the National Construction Code, improve occupant thermal comfort, optimise daylight and provide a visual connection to the outdoors.