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Dear Oliver,

Australian Museum Refurbishment

The Australian Museum is proposing to extent the Crystal Hall entry to the Museum and to make alteration to the internal space to establish a AAA class gallery for touring exhibitions. The crystalline screen is proposed to be extended along as the main façade to William Street. This screen must balance the need for transparency (showcase) with the occupancy requirements and environmental responsiveness. The following key requirements are targeted;

- A reasonable level of comfort for patrons queuing to enter the building
- Task based thermal comfort for staff occupying the entry station
- Ability to provide a reasonable level of visual comfort (glare) to the staff.
- Environmental compliance with the BCA through a performance solution
- Appropriate level of reflectively for traffic around the site

Crystal Hall Extension

The proposed design solution to reconcile these various objectives is the same as previous design of the screen, namely;

- Using state of the art triple low E double glazed façade that selectively allows daylight in but reflect the short wave and infared heat.
- An internal screen of crystalline blades that shade the entry station to the south from direct solar glare. A secondary blind system is proposed over the cut back entry door with future provisioning in other areas.
- These crystalline blades also act to absorb the solar radiation, this is subsequently ventilate out through the top of the screen and is thus effectively

removed from the space. This system is effectively the same as providing external shades.

- The chilled/heated floor will be extended to remove solar load as it strikes the floor. This allows the hall to operate in a naturally ventilated mode for the majority of the year. It is proposed to automate current window systems.
- An air conditioned outdoor supply air system that provides spot heating and cooling to permeant occupied areas under peak conditions or if the space is being operated in function mode. A dehumidification unit will be installed close to the sliding entry doors to deal with infiltration of air when entry doors are open and the overall system will be rebalanced with internal system.

Galleries

The main design goal for all galleries and areas where art is stored is to maintain environmental conditions to conserve the art stored or exhibited in the area. This involves narrow control bands for temperature and humidity, but also reduces minimal air movements within the space. Depending the class of space different environmental standards will apply with the key exhibition area achieving AAA-conditions. Internally there will be a reconfiguration of a variety of air handling units to support the AAA class spaces. These spaces require tight humidity control. It is proposed that the Air handling units are designed to gradate the humidity. Currently the development uses a mix of old trane chillers and energy efficient magnetic bearing chillers, a review is underway in additional energy efficient chillers may be required.

The air distribution system and control system will be developed with low pressure drop, high turn down and fresh air control, potentially using a heat exchange for reheat. A further review of the potential to use heat pumps for heating in order to move the building to a carbon neutral enabled design will be conducted. The efficiency and control of the space conditioning will be the key focus of energy for this development.

Energy efficient LED lighting to be used throughout.

Energy modelling will be utilised to establish operational energy targets using best practice MEPS and will exceed Section J minimum performance.

Overall project initiatives

Generally the alterations will be guided by a 5 Star Greenstar equivalence as no direct comparison tool as the framework to consider and reflect best practice sustainable building principals.

Areas for Photovoltaics have been identified on the roof of the building to help offset energy use.

New amenities will utilise high efficiency Wells rated fitting and fixtures. No additional rainwater tank is proposed due to the nature of the existing building drainage reticulation.

The demolition and construction will target 90% diversion from landfill.

Materials will be selected on the basis of good environmental performance using Green Star metrics as a guide.

The project will develop a climate change mitigation and adaptation plan in the subsequent stages that will consider CSIRO project impacts of climate change using NARCIM

projections. This will consider impacts of hotter days, more extreme rainfall events, wind gusts and how this will impact landscape design and material selection.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Haico Schepers', with a stylized, flowing script.

Haico Schepers
Principal