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All in the Grain

Text
Steve Casey

Photography
Jason Pleaner

Like the grains they have studied for decades, the buildings at the Department of Primary Industry in Horsham grew organically. This world-class agricultural research and development institute needed new and upgraded facilities, so Melbourne-based architects, ClarkeHopkinsClarke, were asked to develop a series of landmark buildings to unify the entire facility and embody a high degree of sustainability.

The 'Link' building forms the centrepiece of the Horsham Grains Innovation Centre. Constructed in the shape of a grain of wheat, a simple but profound form – a testimony to wheat's contribution to Australia's prosperity for almost two centuries. As the main reception and information area, the building serves as the face of the organisation, and as a link point for visitors and employees alike.

Inside, the need for wall display spaces protected from direct sunlight led to the idea of using an opaque drum. Forming the heart of the wheat grain, the 15m diameter Danpalon drum, combined with the use of sunshades and light shelves, draws an abundance of filtered light into the heart of the building during the day (reducing the need for artificial lighting) and makes the building visible in the surrounding landscape at night with Project Architect, Justin Littlefield, integrating the profile of the Grampians mountain range into the elevation of the building.

Dunkeld stonework creates a distinctive exterior contrasting with the modern materials used elsewhere in the building. The colour scheme for the remainder of the building was derived from the stone's hues and tones. Walls are used as a thermal mass to regulate temperature internally and materials of local significance, in particular Red Gum, are featured throughout the building's interior.

Helping to deliver the sustainable agenda are advanced temperature control mechanisms, including windows that open automatically at specified temperatures. Water collected from glass houses, rooves, roads and pavements is run through a wetland for nutrient and sediment control prior to being recycled onto landscape areas.

Further efficiencies included construction of a thermal labyrinth under the building, made possible by a post-tensioned raft slab with deep beams, required to cope with the highly reactive local clay soils. By pouring concrete between the bottom of the rib beams, an underground void was created to draw outdoor air through vents and pre-condition it – either warming or cooling the air – prior to it entering the dual air-conditioning system. This initiative was particularly appropriate in Horsham due to its very cool mornings and hot summer days. The labyrinth was therefore effective in reducing mechanical plant size and on-going energy costs.

"From the Department's point of view, the design work was extremely successful in providing the facility with a greater profile, and consolidating two departments that function far more effectively together as a result," says Colin King, who was Manager of DPI's Capital Projects throughout the project. "It has also been successful in supporting a collaborative research environment inside and outside the department."

Architect/Interior Architect ClarkeHopkinsClarke Architects
Project Architect Justin Littlefield
Design Architect Les Clarke, Dean Landy, Justin Littlefield
Project Manager Atkinson Project Management
Project Team Wayne Stephens, Nicholas Wairwright
Structural/Civil John Mullen and Partners
Electrical/Mechanical/Hydraulic/Environmental/Communications Scott Wilson, Erwin Johnston
Landscape Rush Wright Associates
Ecological Ecological Engineering Holdings
Quantity Surveyor Padghams
Builder Hooker Cockram Projects
Building Surveyor Philip Chun and Associates
Geotechnical Davies Civil Engineering Services

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External walls

'Split Rock' in 'Bluestone' and 'Natural grey' from Pioneer Building Products. 'Castlemaine Spalls' from R & A Maltby & Son, and Danpalon Multicell twin wall polycarbonate cladding in 'Ice' from Australian Polycarbonate Products. Bardelli ceramic tiles from Classic ceramics. Glassform Solarguard Clear Low-E laminated glass from Glassform. Pioneer Building Products (61 3) 9801 1122 R & A Maltby & Son (61 3) 5423 2238 Australian Polycarbonate Products (61 3) 9852 0311 Classic Ceramics (61 3) 9682 6555 Glassform (61 3) 9585 0588

Roof

'Kliplock 406', Zinalume sheeting and corrugated Colorbond 'Armour Grey' from Bluescope Steel Australia. Bluescope Steel Australia 1800 800 789

Windows and Doors

Capral Aluminium (61 2) 9682 0711

Flooring

Carpets are Godfrey Hirst 'Houston' tufted leather loop pile carpet tiles and Karndean Pedigree 'Smokey'. Forbo Marmoleum 'Real/Dual' from George Low. Tiling is premium sealed 400x400x15mm smooth from Sadlerstone, and 'Waringa' 200x200x8mm glazed ceramic floor tiles from Johnson Tiles. Sadlerstone (61 3) 9314 9303 Johnson Tiles (61 3) 9720 4041 Godfrey Hirst (61 3) 9368 8100 Karndean (61 3) 9763 5588

Joinery

Laminex laminates in 'Natural', 'Flint' and 'Metallic'. Laminex Formex 'South-West Jarrah' in velvet finish. The Laminex Group (61 3) 9848 4811



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