

LATROBE VALLEY GOVHUB

ONE OF THE
LARGEST
LIGHT
GAUGE STEEL
FAÇADES IN
THE WORLD

THE \$30 MILLION LATROBE VALLEY GOVHUB WILL BE A THREE-STOREY REGIONAL EMPLOYMENT HUB, SUPPORTING ECONOMIC GROWTH, CREATING JOBS AND DRIVING THE INDUSTRIES OF THE FUTURE.

TOGETHER, INDUSTRY CLADDING & ROOFING AND DYNAMIC STEEL FRAME HAVE ENGINEERED A FAÇADE FRAMEWORK DESIGN THAT FEATURES 18 LIGHT GAUGE STEEL MODULES, WHICH WILL BE CRANED INTO POSITION AND HOOKED ONTO THE BUILDING.

EACH MODULE IS 8M WIDE AND 14.5M HIGH, AND COMPRISES OVER THREE TONNES OF BLUESCOPE'S TRUECORE® STEEL, TO FORM WHAT COULD BE THE WORLD'S LARGEST LIGHT GAUGE STEEL FAÇADE.

A \$30 million project, the Latrobe Valley GovHub will be a three-storey regional employment hub supporting economic growth, creating jobs, and driving the industries of the future. Once complete in late 2020, the 4,000m² property will accommodate up to 300 workers, including 200 new local public sector jobs. Located on the corner of Church and Fleming Streets in Morwell, the GovHub will feature modern office spaces, shared meeting rooms, a community hub, business incubator zones, an exhibition space and a locally-run café.

The GovHub will also be one of the most energy efficient buildings in the Latrobe Valley, holding a minimum 4.5 star energy rating. The GovHub will be built to industry leading standards in sustainability, and will utilise the expertise of its anchor tenant, Solar Victoria, to ensure the building creates and uses solar energy.

The WMK Architecture design has incorporated the Latrobe Valley's industrial history with the building's roof taking cues from the bucket wheel dredges that have been a feature of the region for generations. As part of their design methodology, WMK



Architecture's material palette was selected so that materials could be sourced from within the local region, and any trades required could largely be supplied by local builders. As a result, the project is expected to create 100 jobs during construction, with more than 75% of building materials and services sourced locally.

Steve Tillinger, Director of Architecture at WMK Architecture, said the GovHub will revitalise Morwell. "The building of the Latrobe Valley GovHub plays an important role in the reactivation of the Morwell community, generating both enterprise and employment, an initiative WMK are very proud to be a part of."

Castlerock Property, the developers of the GovHub, said the project will support local businesses and contractors across the Latrobe Valley. "The Latrobe Valley GovHub is an opportunity to create a building with character that truly belongs to Morwell, and with the design work now complete we're looking forward to working with as many local contractors as possible to make the GovHub a reality," said Adam Bronts, Director of Business Development at Castlerock Property.

LIGHT GAUGE STEEL FRAME: ENGINEERING AND DESIGN

Industry Cladding & Roofing was engaged by Castlerock Property to supply and install: over 4,000m² of COLORBOND® standing seam cladding and roofing; as well as over 2,000m² of LYSAGHT KLIP-LOK® roofing, box gutters and ridge capping.

Established in Bacchus Marsh, Victoria, in 2012, Industry Cladding & Roofing specialises in architecturally designed wall cladding, façade and metal roofing projects. Equipped with their own roll-forming capabilities for cladding panels and flashings, Industry Cladding & Roofing offers complete control over the quality of finishes and tight timeframes.

According to Grant Wright (Director, Industry Cladding & Roofing), "We were engaged by Castlerock to construct a prefabricated lightweight façade that could be pre-clad before being craned into position."

It was not long before Industry Cladding & Roofing brought Melbourne-based light gauge steel frame manufacturer Dynamic Steel Frame into the project. "We'd worked with Dynamic Steel Frame in the past, which is why we were very keen to get them on-board again. Their team is extremely thorough and professional, and they always hit their targets, which makes our life on-site so much easier," said Wright.



Dynamic Steel Frame pioneered the use of automated framing systems to create 3D façade and balustrade modules some seven years ago.

According to Peter Blythe (Managing Director, Dynamic Steel Frame), "We were the first company in Australia to use FRAMECAD software to manufacture large scale 3D façade elements. Prior to this, they were handmade by cutting up purlins and studs. We thought outside the box and automated the process. Our first project was the Tip Top bakery site in Brunswick, Melbourne. We made compound curved, lightweight balustrades that were craned up onto the building. From there, we pushed the boundaries, working with a range of innovative cladding and façade contractors, like Industry Cladding & Roofing, to get to where we are today."

Together, Industry Cladding & Roofing and Dynamic Steel Frame ironed out the design and engineering of the light gauge steel frames. "After completing the engineering and a prototype, we came up with a design that features 18 modules, each of which will be

Above (Top)

One of biggest challenges was tilting each module from horizontal to vertical.

Above (Bottom)

Each module separates into five pieces, which are bolted together with laser cut strong backs.

Left

The platform at Morwell with the prefabricated and fully clad façade modules.

“ We were the first company in Australia to use FRAMECAD software to manufacture large scale 3D façade elements.”

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The largest of the 18 prefabricated modules is 8m wide and 14.5m high, and comprises over 2.2km or three tonnes of BlueScope's TRUECORE® 1mm thick, 89mm wide steel.



The first module is craned into place.



More modules are erected on-site.

“Light gauge steel is significantly lighter and has a much higher tensile than any other product that could have been used to achieve the desired outcome on this project.”

craned into position and hooked onto the building to form a fully constructed system. That's how we achieved the world's largest light gauge steel façade modules," said Blythe.

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"There are four individual designs, which are then flipped and mirrored to create the 18 large-scale modules. There are also simpler end sections," said Blythe.

TRANSPORTATION AND ERECTION

The transportation process was simple. Once Dynamic Steel Frame had manufactured the modules at their factory in Dandenong, they were transported to the Morwell site in pieces.

"Each module separates into five pieces, which are bolted together with laser cut strong backs. We place the two side pieces on one semi-trailer, the top and bottom sections on another semi. Then, the fifth section, which is basically an undercroft, on a third," explained Blythe.

Obviously, the sheer size of the modules presented some challenges, particularly when it came to erection. "One of biggest challenges was tilting each module from horizontal to vertical and then

getting it onto the building. This is due to their size, rather than their weight, as their fully clad weight is five tonnes. It is the volumetric size of each module that makes manual handling and lifting difficult. That being said, the installation and erection has been a relatively straightforward process."

"When we did a test lift in our yard, it only took us four hours to assemble one module. And, we were working with tolerances that were not identical to the actual construction site. This meant we had to adjust some of the frames to ensure they matched exactly. Now that we are on-site, it is only taking about one and half hours to erect each module, which is exceptionally fast given their size and scale," said Blythe.

WHY LIGHT GAUGE STEEL?

Light gauge steel was selected because it was the lightest, most accurate way to create the complex shapes specified for the project. "This was a design and construct job, so the methodology was completely open to any technology. Light gauge steel is significant lighter and has a much higher tensile than any other product that could have been used to achieve the desired outcome on this project," explained Blythe.

"The structure itself is a combination of structural steel, with concrete floors, so, the system used to support the façade

had to be lightweight. It would have been almost impossible to use either concrete or wood as both these materials are more than twice the weight of lightweight steel and nowhere near as accurate."

"The façade sits on 600mm stubs that are welded onto the side of the building. Because the frame is so light, not a lot of additional engineering was needed to ensure these stubs were structurally sound," said Blythe.

"The light gauge steel frames were prefabricated using an automated CNC machine. This ensures the design is recreated perfectly to the millimeter. Nothing else provides the accuracy and total repeatability that manufactured light gauge steel does. The rigidity and strength of the steel means that the designers' intent is precisely what is created by the machines."

According to Wright, light gauge steel also afforded benefits in terms of the construction schedule and on-site costs. "The benefits of prefabricating the modules included speeding up the construction process, saving on access equipment and scaffold costs, and watertightening the façade faster compared to alternative methods."

Blythe concurred, "If the façade had been fabricated on-site, the scaffolding costs would have been approximately \$1 million. Also, it would have added an extra four or five months onto the construction schedule."

Industry Roofing & Cladding is keen to continue exploring the benefits of light gauge steel. "We would use lightweight steel frames again due their straightness, design potential and workability," said Wright.

PROJECT TEAM

CLIENT: Castlerock Property

ARCHITECT: WMK Architecture

ENGINEER: Strutterre Engineering

BUILDER: Castlerock Property

FAÇADE CONTRACTOR: Industry Cladding & Roofing

STEEL FRAME MANUFACTURER: Dynamic Steel Frame

STEEL MANUFACTURER: BlueScope