

Introducing Nelson Marlborough Institute of Technology Arts and Media Building

NMIT's Arts and Media Building was officially opened on the 31 March 2011 by the Minister of Tertiary Education, Stephen Joyce. For the first time in NMIT's history, all arts students are now studying in this one purpose-built facility at the Nelson Campus.

This new building is a significant part of a long term vision for NMIT of developing their Nelson campus. "Having a building that is state-of-the art for New Zealand is going to be an integral and memorable part of gaining their qualifications for our arts and media students," said NMIT CEO Tony Gray.

"The building unifies the programme area for the first time, bringing staff and students together and enabling the sort of cross-disciplinary conversation and collaboration that generates innovative student work. We love its handsome and distinctive aesthetic and the generous way it relates to the surrounding cityscape. The result is a lovely building which works extremely well for us, enables an energetic creative atmosphere to develop within and around it, and is a huge asset to the campus and the region. Working in this building is a real pleasure," said Suzie Peacock, former Head of the School of Arts and Media.

NMIT's Arts and Media Building is a world-first for innovative use of wood in the structure of a multi-storied building. It is the realisation of a national design competition, sponsored by both NMIT and the Ministry of Agriculture and Forestry. MAF requirement was for a building that uses and showcases its construction in timber, is environmentally sound and demonstrates, educates and encourages the future use of timber in the design and construction of multi-level commercial buildings in New Zealand.

Irving Smith Jack Architects designed the building to highlight its timber construction. Timber components are visible, showcasing the innovative design approach and allowing this building to act as an exemplar for both the design and building industries. 'As architects, we see this as the first in a new generation of creative, sustainable, wooden structured multi-storied buildings,' said Project Architect Andrew Irving.

All structural beams, columns and floors are of engineered timber construction in locally sourced and manufactured Nelson Pine Ltd laminated veneer lumber (LVL). It has excellent strength properties, is durable and fire resistant. This has allowed the design of beams, columns and floor systems that are the equivalent of steel and concrete. The building's movement and regional seismicity are being measured by the University of Auckland to assess its structural performance over time.

Aurecon structural engineers have achieved a "world first" timber seismic design for this project, incorporating technology developed at the University of Canterbury. Using pairs of rocking timber walls, joined with energy dissipaters, the structure is able to absorb seismic energy and reduce building damage during an earthquake. This is a new generation of seismic engineering known as damage avoidance design. Auercon's Carl Devereux, Lead Project Engineer said, "This NMIT building demonstrates that a high level of earthquake protection is achievable and affordable. The innovation in design will ensure this building is functional after a major earthquake event. It's important for building owners to know that this higher standard of earthquake protection is now available."

This building is equipped with up to date digital gear necessary for contemporary arts and media practices including music editing and composition, video, graphic design, image manipulation, publication design and production, animation, internet design and more. It includes workshops with a range of technical equipment and specialist facilities for handling different processes, materials and substances such as for working with textiles, woods, metals, plastics, ceramics, glass, paper, printmaking of various sorts, painting and drawing.

Construction started in December 2009. Arrow International were project and construction managers. “The nature of the innovative design, and the ability for the construction market to meet the demands of that design, were exciting to co-ordinate and manage. The entire consulting team and client combined together to make this planning process as effective as possible, in order to meet the project objectives,” said Steve Kelso, Arrow International, Nelson Branch Manager.

The Background

The past

Over the past 20 years there has been a growing need for new arts facilities at NMIT. In 2006 a review of buildings highlighted a need for improvement of the facilities for arts and media teaching. The school was physically located across several different buildings on different parts of the campus and the spaces were not keeping pace with the technological and creative requirements of arts and media students. NMIT decided to commit funds towards developing a cohesive Arts and Media building. In 2007 the board of NMIT signed off capital expenditure to develop new purpose-built Arts and Media building.

Landmark Timber Design

In 2008 discussions were held around design concepts between NMIT managers, Arts and Media staff and the Ministry of Agriculture and Forestry (MAF). A competition for the design was created stipulating that the building must be sustainable, local and substantially made of wood. In partnership, MAF and NMIT offered a national design competition, with MAF providing \$1m towards construction costs as the prize. MAF’s involvement relates to their initiatives around how the forest industry can meet objectives for climate change mitigation as well as creating a sustainable resource for commercial building construction benefiting the climate and our economy. Planting more trees creates a carbon ‘sink’, MAF research has shown that well-managed sustainable forests mitigate erosion and improve water quality and wood buildings also store carbon emissions. Currently there are very few wooden commercial buildings in New Zealand, a reflection of the fact that there are not many builders and companies skilled in using wood for commercial buildings. The NMIT Arts and Media building is therefore a vital teaching tool. Engineers, architects, builders and the associated training providers have been, and continue to be, invited to assess the construction process and the building to promote the use of wood in commercial construction. This building shows that timber can be successfully used in multi-storey commercial buildings.

Design Team

A Nelson based team of Irving Smith Jack Architects Ltd and multi-disciplinary engineers Aurecon, won the design competition against a formidable array of top design teams from throughout New Zealand. The judges’ comments said the design solution meets the specific needs of NMIT as a creative learning institution, using state-of-the-art structural timber technology coupled with the use of locally produced materials, including Nelson Pine Ltd Laminated Veneer Lumber (LVL), and a design that expresses all the internal structural components. It is unique in the world in terms of wooden building design. In 2009 the project partners and suppliers were confirmed with a significant local content. The world first nature of the project has required an involved series of peer reviews including Dunning Thornton Consultants and the University of Canterbury.





Project Architect, Andrew Irving, said, “The design team needed to upskill and understand a new way of building in timber. We owe a debt of thanks to local firms who collaborated with us to develop the details of the new project, and help streamline the fabrication and construction process.”





Construction

Construction commenced in December 2009 - managed by Arrow International. The project has involved an array of local contractors and suppliers. All LVL components were manufactured at Nelson Pine Industries, Richmond plant. Hunter Laminates and Potius Floor Systems prefabricated all LVL structural components, allowing a seamless process of site erection by Paremata Construction. Gibbons Construction was the carpentry contractor.

Who was involved and how

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| <p style="text-align: center;">Building Owner</p>  | <p>NMIT is the largest provider of quality tertiary education in the top of the South Island. Art teaching has been a vital part of its history. This new building is a significant part of a long term vision for NMIT of developing their Nelson campus.</p> |
| <p>Major Contributors</p> | |
| <p style="text-align: center;">Sustainable Wood Partner</p>  | <p>MAF is a government department and MAF Forestry is tasked with supporting the forestry industries. Their financial support for this project encouraged the use of our abundant, renewable forestry resource with innovative use of wood in building construction. Planting more trees creates a carbon 'sink' and wood buildings also store carbon emissions. MAF's involvement in this project fits their goals of developing wood as sustainable resource for commercial building construction benefiting the climate and our economy.</p> |
| <p style="text-align: center;">Principal Sponsor</p>  | <p>BNZ is committed to enabling a high achieving New Zealand and their involvement as principal sponsor of the NMIT Arts and Media Building not only supports the significant increase in training capabilities for NMIT but it also offers many benefits to the wider region affirming Nelson as the centre of artistic activity and a cultural destination.</p> |
| <p style="text-align: center;">Industry Partner</p>  | <p>Gen-i supports the new high-tech Arts and Media building with its leading edge media suite. Gen-i has not only assisted in setting up the IT infrastructure in the new media suite, including apple mac labs for the design students, but is also providing the specialist engineering expertise to help NMIT tutors with classroom teaching.</p> |
| <p>Project Contributors</p> | |
| <p style="text-align: center;">Architect</p>  | <p>Nelson architects Irving Smith Jack were project architects, and lead consultant for the NMIT Arts and Media project. ISJ have developed a niche New Zealand practice closely concerned with urban and environmental context. They have fostered a reputation for delivering innovative solutions within sensitive environments that has led to a position of national standing. ISJ has an ongoing interest in the use locally sourced structural timber solutions integral with design in place of more traditional steel or concrete options and in addressing fundamental issues of sustainability within the building industry.</p> |

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| <p style="text-align: center;">Engineer</p>  | <p>Aurecon is one of the largest engineering design teams in New Zealand with a particular emphasis and proven track record in education projects. The NMIT Arts and Media project is a locally managed project; Nelson based engineers are drawing on a wealth of national and international experience to make this project an outstanding success. Specialist timber and seismic design has been a key focus of the NMIT Arts and Media project. Aurecon are world leaders in both areas.</p> |
| <p style="text-align: center;">Project Manager</p>  | <p>Arrow International is NMIT's project delivery partner and has worked with NMIT and the consultant team since the resolution of concept design. The innovative nature of this project sits within Arrow's focus on the delivery of complex projects or projects with time, cost, or quality requirements beyond that normally achieved in the NZ building industry. As project leaders, Arrow understands the responsibility to ensure sustainability issues are fully considered by clients on all projects.</p> |
| <p style="text-align: center;">Supplier</p>  | <p>Nelson Pine Industries Ltd supplied all the Laminated Veneer Lumber (LVL) for the NMIT Arts and Media project. The specification of Nelson Pine LVL in the new NMIT building is the appropriate choice of structural material because it has low seismic mass, excellent fire performance, large carbon storage, fast construction and cost effectiveness. The extensive use of locally sourced wood will help satisfy the sustainability objectives of the project and create an attractive building that will enhance the architectural environment and inspire the artists and designers who will work in it.</p> |
| <p style="text-align: center;">Research</p>  | <p>The world-first pre-stressed timber technology, named Pres-Lam, was developed at the University of Canterbury by a timber engineering team including Professor Andy Buchanan, Associate Professor Stefano Pampanin and Dr Alessandro Palermo. The NMIT design was based on extensive experimental testing, detailed computer analysis, and peer review of the design calculations at the University.</p> |

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| <p style="text-align: center;">Supplier</p>  <p style="text-align: center;">POTIUS BUILDING SYSTEMS LTD</p> | <p>Potius Building Systems Ltd has developed a unique engineered flooring system made entirely out of laminated veneer lumber (LVL). This system was used as the floor structure for level 2 and 3 of the Arts and Media building and allows for large spans made completely out of wood grown in the Nelson region. The joists on the underside of the Potius floor will remain exposed adding to the ambience of the landmark building. Potius BSL is a small Nelson company which is making large strides into the timber construction industry.</p> |
| <p style="text-align: center;">Supplier</p>  <p style="text-align: center;">HUNTERBOND ARCHITECTURAL TIMBER SOLUTIONS designed • engineered • built</p> | <p>Hunter Laminates Nelson Ltd fabricated the 380 cubic metres of Nelson Pine LVL into the structural elements for the buildings, working closely with the design team to give the optimum finish and constructability. The Hunterbond brand is well known in the construction industry and has a proven track record in fabricating large timber components. One of the keys to success for future timber buildings is provide high quality accurate easy to install components.</p> |
| <p style="text-align: center;">Supplier</p>  <p style="text-align: center;">STIC.</p> | <p>“The Structural Timber Innovation company is proud to have been involved in the creation of the world’s first post-tensioned multi-storey commercial engineered timber building. The NMIT building is the first commercial building to use EXPAN shear walls with Pres-Lam technology to form the lateral restraint system for the building. These walls are prefabricated post-tensioned hollow-section LVL modules, extending continuously the full height of the 3-storey building and stressed to the foundations,” said Robert Finch, Chief Executive Officer, Structural Timber Innovation Company Ltd.</p> |
| <p style="text-align: center;">Advisor</p>  <p style="text-align: center;">NZ Wood Design Advisory Centre</p> | <p>The NZ Wood Design Advisory Centre is aimed at facilitating larger-scale commercial building projects using structural timber. The design centre is part of the NZ Wood programme, an industry funded initiative that supports the use of sustainably grown New Zealand Wood. The centre also has close links with STIC, the Structural Timber Innovation Company based in Christchurch and also the Timber Design Society of New Zealand.</p> |