# 024

**Project** Manaaki Whenua Landcare Research Building, Tamaki Campus, University Of Auckland

**Architect** Chow:Hill

**Builder** Hawkins Construction Ltd.

## COOL SCIENCE

**New Zealand's climate and topography is similar in some ways to a number of Scandinavian countries and perhaps this is the link that produces a disproportionately high quality architecture. Brisk temperatures and cool winters appear to direct creative focus in a way lost on sun-loving hedonists. In theory, cooler climates could easily produce a lot of brooding buildings, but globally this is not the trend. Location in these climates is literally cool and seems to provide a cue for some of the sharpest design work around.**

NZ's agricultural economy is paramount to the nation's financial health and this gives special importance to bio-security and pest control organisations such as Manaaki Whenua Landcare Research and the Ministry of Agriculture and Fisheries (MAF).

Dedicated to preservation and protection of the nation's plants, fungi, wildlife and fisheries, Landcare and MAF's new administrative headquarters occupies a site on the northern edge of the Tamaki Campus, University of Auckland.

One of country's larger architecture practices, Chow: Hill caters for both groups under the one roof with its design for the $10 million research, administration and collection facility. Too often institutions commission the kind of buildings that are dead to the eye and spirit. Both organisations – champions of the native environment and ecology – reveal an altogether different scientific line of enquiry.

The project exhibits sustainable design without the extreme expression often popularised by the dreadlocks and dags in this form of building. Here the process is intrinsic, rather than applied, to its purpose.

Despite a demanding, multi-use, multi-client brief, the building remains unified. It is characterised by high performance materials and design elegance that elevates the humble shed to new heights. Maximum use is made of natural daylight and ventilation - thus the extensive use of renewable materials. The environmental rating of the building clad in COLORSTEEL® (The prepainted steel from New Zealand Steel) and ZINCALUME® steel is among the highest evaluated within NZ and Australia.

Contributing editor/photographer Peter Hyatt spoke with project director Maurice Kiely of Chow: Hill to discover a building with its healthy share of pests and bugs:

***How difficult was it to incorporate poetry of form when the overwhelming demand for government bodies is for standard issue anonymity?***

The finely detailed junction of feature COLORBOND® and ZINCALUME® cladding of Landcare's new research facility in New Zealand.

Our understanding from the outset was of our client's intention to step beyond the standard reference. We sensed their commitment and the opportunity to have a go, so within the various and demanding project constraints we worked with them to stretch the paradigm as much as possible.

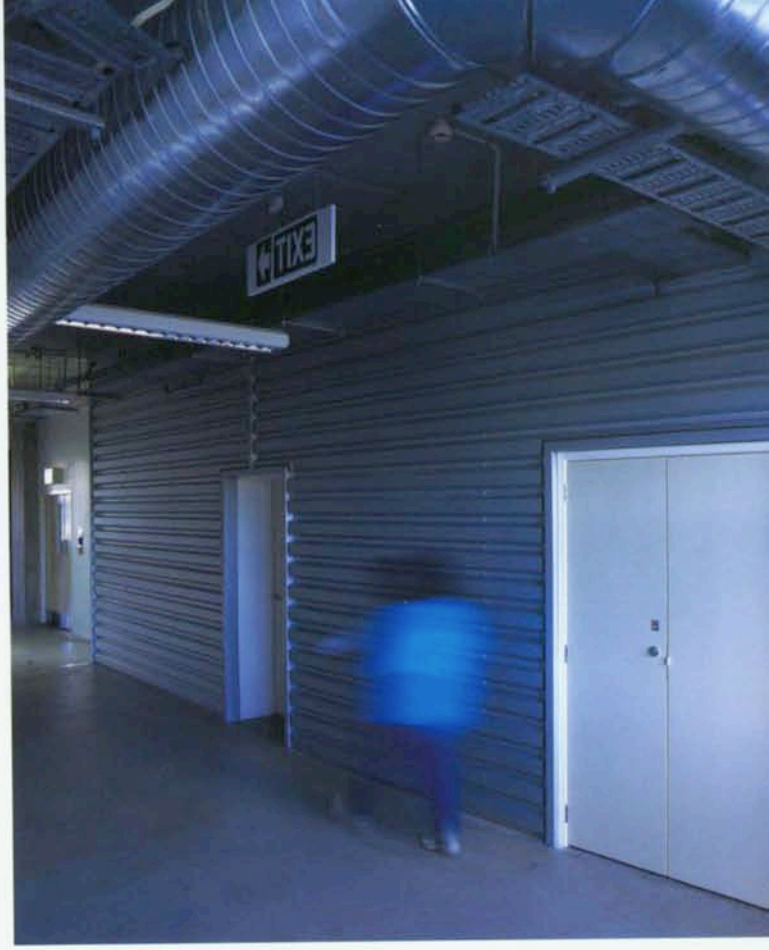
***Was the ESD requirement big in the beginning, or was it just assumed to be an intrinsic part of the overall response?***

ESD was a major criteria for the design, but not an overriding one, as the design team had also to address functional, operational, technical, aesthetic and budgetary considerations. We worked through all the issues and responses to sustainable criteria as part of the overall process and at an early stage these were a major determinant of the building's overall form and relationship to the site. Once this was achieved it allowed us to free up the building. The risk with ESD being the only compass is that the results can inherently lose focus on the overall vision. Other than design decisions on orientation, building footprint size, ratios of closed to glazed walls and sun-shading, our strategies were varied. They included solar water heating, reduced water usage through composting toilets and rainwater harvested from roofs for glasshouse irrigation and a highly insulated external building envelope. The result is an extremely energy efficient solution.

***How does this explain the split personality of the two main elevations? One is relatively corporate – the main street frontage elevation, while the rear is quite edgy, almost extroverted and in the middle a brilliant ZINCALUME® steel clad courtyard that punches daylight back into the building where it's needed.***

The building arrangement works on a number of levels. On a broad level, the building complex is arranged in three parts: the first, clad in steel, contains the highly technical laboratory and collections function. The second, timber-clad, houses the social and administrative functions, and the third in glass, the plant propagation function. The courtyard is explained by the need to limit floor-plate width to fifteen metres, to allow cross flow of natural ventilation and maximum penetration of daylight.

In one view, the building is organisation driven, whereby MAF with its public interface and laboratories occupies the ground floor. This is a facility that involves testing and treatment of plant and insect pests against potential bio-security threat. Above that on the horizontal cut are Landcare's research laboratories and chamber areas for significant national collections of insect and fungi specimens. At another view, the building is arranged with either "dumb" (collections) spaces or contained and mechanically ventilated laboratories around both sides, with offices ringing the courtyard. These offices, located away from noise, dust and excessive heat gain all have operable windows and there is an availability of light and fresh air, a counterpoint to laboratory enclosure. Interiors are bare, uncluttered and fairly reflective, thus minimising the need for artificial light.




***How does your expression of material talk about building assembly and function?***

The divided spaces of the entrance form linking spaces for the co-tenants. The horizontal division between the two groups is quite important to their function and identity. Linking spaces are reception, cafeteria and kitchen. These form the social/cultural component and are clad in cedar. The harder edged, profiled steel cladding form signifies the laboratory, while the glass and shade-houses provide the other material component, housing plant propagation functions. The insect and fungal collections are contained in the profiled, curved metal part at the rear. These are very conscious material choices that represent the three functions.

***The rear reveals itself in a quite unexpected way. You use a boldly, decorated motif that is arguably the most distinguishing and rewarding aspect of the building. This intriguing aspect is almost hidden from public view.***

That was partly function and partly the type of building. The street frontage deals with complex issues of solar gain, noise and dust. There are encapsulated laboratory spaces where air is positively pressured to eliminate dust, for example. Because the labs are contained, they use double-glazing and are on the street frontage. These in turn provide a barrier for the offices that wrap around the inner courtyard. The labs really perform better as orthogonal spaces with straight-lines that better lend themselves to a more rational configuration of spandrel panels and glazing.

***What about the university campus, was there a longer-term view?***

That organisation of spaces and expression allowed us to arrange the collection spaces at the rear. Essentially it's on the south to reduce solar gain and allow the future expansion of the collection spaces over the car-park. It also is intended to relate well to the that part of the university campus

(Top left) So often a neglected facade, the rear elevation here represents a symbolic woven basket for the collection and storage of precious specimens.

(above) A simple pallete of non-synthetic materials provides a robust, direct material vocabulary.

(top) The main street elevation as part of the Tamaki Campus, University of Auckland.

(opposite) One of the project's design key's is the ZINCALUME® clad courtyard that punches daylight and fresh air into offices that ring the space.

adjacent, being seen as part of an integrated whole.

***The patterned wall is dramatic... almost like a giant Maori tattoo.***

We saw the collection of specimens as a precious resource, held within a vessel or woven basket. At certain points during the project local Maori iwi were involved and we wished to reference that engagement within the design of the façade, expressed in the stepped, coloured patterning of profiled cladding.

***How satisfied are you with the cladding system?***

It was difficult to achieve a layering and drape curve. We had to choose between drape curve or to crimp and fix. We originally considered pre-cast concrete for the two main walls but cost and manufacturing availability ruled these out. Coated steel compared very well in our comparisons and it soon became obvious that it is one of the best materials around.

***Presumably you felt steel helped facilitate and justify some of those obligations?***

We didn't look at materials in isolation. It was important to view steel as a cladding system so we considered framing depth and insulation, or R, value. Then you consider the profile. A good general rule of thumb is the less refined it is and the less embodied energy, the more sustainable the material. Locally profiled steel was readily available.

***How else have you considered ESD issues?***

On the building's flank the profiled steel is a rain screen but below the interior walls is a reinforced concrete block or pre-cast panel. This provides a reverse wall with the mass on the inside rather than the outside. We get a lot of daylight and fresh air into the building where it's possible and those may seem small gains, but in terms of overall quality of occupancy the energy savings and staff satisfaction benefits are well worthwhile.

Because it's a building of necessity with very restrained openings and apertures, it plays into your hands in some respects in achieving its ESD ambitions.

The problem is a need for highly serviced spaces such as laboratories and then very dumb spaces like collection areas that just require low humidity and low temperature. And then you have office spaces where you require fresh air.

***It's a balancing act between enclosure and openness?***

Buildings of this type and design require a balancing and settling over their first year to arrive at optimum performance of both active and passive systems and this is being reached by the Landcare Research building. This is backed up by both occupant reports and empirical testing by researchers within their organisation.

**Peter Hyatt**

**Client:**
Manaaki Whenua
Landcare Reasearch

**Project:**
Landcare Research Building,
Tamaki Campus,
University of Auckland.

**Architect:**
Chow:Hill

**Project team:**

**Project Director:**
Maurice Kiely

**Architectural team leader:**
Stuart Mackie

**Laboratory design:**
Bob Jones

**Documentation team leader:**
Neil Kaiser
**Tel:** 09 279 5131

**In collaboration with:**
**Diprose Architects:**
Peter Diprose
**and:** Robert Vale,
University of Auckland

**Structural engineer:**
Connell Mott MacDonald

**Builder:**
Hawkins Construction Ltd.

**Steel fabricator:**
Clarke Roofing

**Principal steel cladding material:**
**Roof and wall** - finished in COLORSTEEL® COLORBOND® and ZINCALUME®

**Project cost:**
$10.76 million

**Photography:**
Peter Hyatt