KEEPING YOUR HOME DRY.

The evidence. Your stories. Our progress.

There are numerous, and sometimes complex, issues that prevent our current homes and buildings being warm, dry and healthy in New Zealand. In most cases, it's not just about how buildings are built or renovated it's also about how they are used every day.

To help better understand and solve these issues, BRANZ has established a multi-year WDHB (Warmer Drier Healthier Buildings) programme. The programme will provide evidence-based information to help home and building occupants, building owners and the building industry produce and maintain warm, dry, healthy environments. Ultimately, New Zealanders should have homes that manage moisture properly and provide safe indoor environments.

The WDHB research programme builds on the WAVE (Weathertightness, Air Quality and Ventilation Engineering) programme, which was a six-year initiative that ended in October 2015.

WAVE removed some of the guesswork around moisture and contaminant control in the New Zealand building stock. BRANZ is helping to avoid future issues resulting from changes to materials, designs and construction methods through further research that builds on the WAVE findings.

This WAVE research, which was funded by the building research levy and the Ministry of Business, Innovation and Employment, is summarised below.

To find out more about the current Warmer, Drier, Healthier Buildings research programme and what we hope to learn and achieve, visit www.branz.co.nz/wdhb.

THE EVIDENCE.

What we learned from WAVE

The WAVE programme recognised that the performance of the building envelope is linked to the environment within the building. Through computer modelling and real-world experiments, researchers developed techniques which are being expanded upon in the WDHB programme.

THE WAVE PROGRAMME WAS SPLIT INTO FOUR COMPLEMENTARY STREAMS:

WEATHERTIGHTNESS

INTERSTITIAL MOISTURE

INDOOR AIR QUALITY

VENTILATION

BRANZ

WEATHERTIGHTNESS

The aim of the weathertightness research stream was to develop a wider range of weathertight building solutions. Among the things our research achieved in WAVE are:

- We clarified the roles of air and water management in common New Zealand wall systems. This allows designers to be confident the acceptable solutions to clause E2 of the building code are effective, and can assist with the design of alternatives.
- We looked at the role of vapour control layers in New Zealand walls. This showed that existing typical practice will not lead to accumulation of condensation in wall assemblies, but that more work is required to understand the potential for mould growth to occur.

In the WDHB programme we are looking at claddings for use on taller buildings to see how they can manage the increased wind speeds and movement associated with an increase in height.
www.branz.co.nz/wave-weathertightness

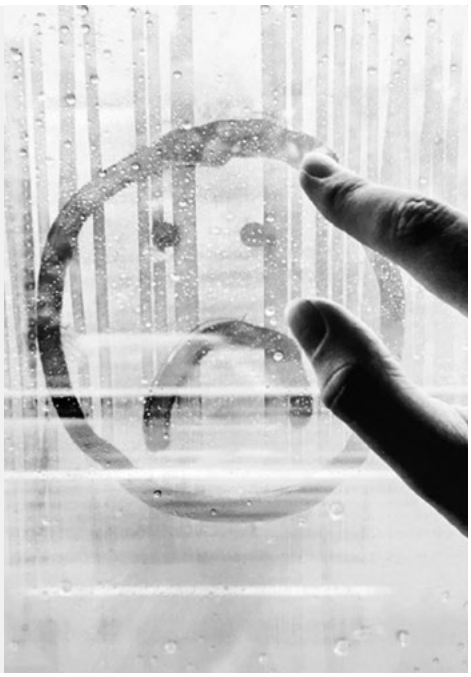
INTERSTITIAL MOISTURE

The interstitial moisture (condensation within the building structure) stream looked at moisture management in roof spaces - both residential and commercial.

To do this we built mathematical models and an outdoor test facility to monitor full-scale commercial and residential roof specimens and undertook field ventilation surveys.

The result was considerable information about how condensation can build up in a roof and how to avoid it. The main findings, in a very brief form, were:

- Avoid moisture getting into the roof in the first place by ventilating buildings effectively and regularly and restricting the movement of air into the roof cavity from the occupied space.
- Roof ventilation can then be employed if roof moisture levels are still too high.
- We developed guidance on the moisture design of large span roofs for schools. This essentially implied that effective thermal breaks have to be employed to keep the roof structure warm enough to prevent condensation (and corrosion) occurring.
www.branz.co.nz/wave-interstitial-moisture



INDOOR AIR QUALITY AND VENTILATION

BRANZ's most recent House Condition Survey found that visible mould was present in over half of the housing stock. In WAVE, we investigated whether photocatalytic oxidisers were effective against a common NZ allergen. We also looked at the role ventilation plays in dealing with probably the most important contaminant, moisture, and how well this is being achieved in our current homes.

Through surveys and other research tools we found that only one third of new homes are ventilated correctly compared with guidelines from the World Health Organisation. Therefore, we need to better understand occupant behaviours to encourage more people to take steps to ventilate their homes. This is being researched as part of the WDHB research programme.

The result of the WAVE research was considerable data on what causes moisture build-up and how to avoid it through ventilation e.g. opening windows etc.
www.branz.co.nz/wave-indoor-air-quality
www.branz.co.nz/wave-ventilation

YOUR STORIES.

Putting research into action

Whether you are an industry expert, a building occupant or owner these stories show how BRANZ research can be put into action to help inspire better buildings that are warmer, drier and healthier for New Zealanders.

HOME AND DRY.

A six-year project to investigate the poor indoor environment of some New Zealand buildings reveals major problem about the way Kiwis use their homes.

www.branz.co.nz/home-and-dry

DISPELLING LEAKY ROOF MYTHS.

A leaky roof can lead to a damp, cold and unhealthy home. However, ground-breaking BRANZ research suggests a leaky roof might not always as leaky as it first appears.

www.branz.co.nz/dispelling-leaky-roof-myths

AVOIDING A MEDIUM-DENSITY HOUSING WEATHERTIGHT CRISIS.

The leaky home crisis was a disaster for New Zealand. As residential buildings get taller, the industry must take care to avoid repeating past mistakes.

www.branz.co.nz/avoiding-a-mdh-weathertight-crisis

CASE STUDY: HOW BRANZ WAVE RESEARCH CAN BE USED.

New BRANZ research provides unique guidance to improve the quality of New Zealand buildings.

www.branz.co.nz/how-branz-wave-research-can-be-used

OUR PROGRESS.

Further research that builds on the WAVE findings is now underway through the BRANZ Warmer, Drier, Healthier Buildings (WDHB) multi-year programme.

This programme focuses on encouraging New Zealanders to change their behaviour by having the knowledge and understanding to make effective decisions in producing and maintaining warm, dry, healthy environments.

The new WDHB research includes:

- developing a shared understanding of the issues that prevent our current homes and buildings being warm, dry and healthy.
- identifying solutions to developing warmer, drier, healthier homes and buildings
- providing industry with knowledge and tools to implement the solutions
- providing consumers (owners, users of homes and buildings) with the knowledge to make effective decisions in producing and maintaining warm, dry, healthy environments.

Building owners and occupiers have a role to play in making homes healthier – it's not just about how buildings are built or renovated, it's also about how they are used everyday.

There are numerous, and sometimes complex, issues that prevent our current homes and buildings being warm, dry and healthy.

To find out more about the current research programme and what we hope to learn and achieve, visit www.branz.co.nz/wdhb