

The official newsletter of the Civil Engineering Testing association of NZ

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Issue 005, December 2008

From the Chair

.What an amazing year 2008 has been for our industry. We have seen some great developments from CETANZ with the benefits flowing through to our members and organisations.

Our Technical Issues working group has started our IANZ backed national proficiency testing programme with the mammoth task of the Vibrating hammer test. The Careers and training group has stated the process of investigating qualifications for our industry. Last but in no way least, our Society Activities group has organised our conference, CETC2008, attended

by close to 100 people from New Zealand and Australia.

My thanks go out to Claire Laybourne as previous leader of our Society Activities group who provided an exceptional amount of time and effort to organise and convene the conference. we wish her all the best in Australia. Further thanks must go to Brigitte Sargent who has provided secretarial duties for CETANZ since our inception. Brigitte has set up our links with IPENZ administration and we wish her all the best for her growing family next year.



We also look forward to developing CETANZ over the coming 2 years with Jennie Dingley of BECA – Geotest and Eric Paton of Fulton Hogan joining our committee. We have already seen some developments following on for our last committee and I look forward to helping CETANZ provide the best service to our members in this changing business climate.

The committee are looking forward to growing CETANZ benefits for our members as our young organisation starts to grow. Please feel free to contact myself or any committee member if there are any areas you believe we should be providing for

you as our members. All the best for the Christmas and New Year breaks. Paul Burton Chair of CETANZ

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From the working groups...Technical

Update from the CETANZ Technical Group 08/12/08

Following on from the committee election the CETANZ Technical Working Group has been reformed and the following people have joined the working group. Jayden Ellis (Technical Group Leader) Steven Anderson, Howard Jeffery-Wright, John Evans and Stuart Moulding. Keith Towl sits with the Technical Group as a representative of IANZ.

So what have we been up to since the conference......

Goals for the next 2 years.

The technical group met on December the 5th and agreed to carry over the original set of goals with one or two minor changes made to bring focus to issues that were brought up at the last conference.

Continue to develop Proficiency Program – Produce more concrete, aggregate, soils, field testing, based proficiencies and start working with regional group representatives to organise regional proficiency schemes.

- **Standards Review** start a review process with NZ Standards, work with other stake holders, AQA, RNZ, NZTA, NZRMCA etc. Look for alternative funding.
- **Continued Technical Support to CETANZ members** - encourage members to bring to CETANZ attention issues that may affect all members, issues that need clarification and opinion from national level.
- **Represent Our Industry** Make comment on Standards and guidelines up for review. Lobby on behalf of CETANZ membership.

Provide information on Best Practice - Set up technical forum and /or guidance document on Uncertainty or other issues that affect our industry.

Seek Feed Back on all above issues – survey members and promote discussion amongst members.



NZ Vibe Hammer Test Method Review

As many of you will be aware 34 New Zealand Laboratories participated in the CETANZ NZ Vibrating Hammer Proficiency Round. Results have been collected by George Ball of OPUS and laboratory identity was controlled by Keith Towl of IANZ. CETANZ have received the draft data analysis report and have reviewed and returned to George. Once CETANZ has the final version, a copy along with CETANZ Technical Group commentary will be distributed to all the participants.

At this stage, with outliers removed, the reproducibility and repeatability values for dry density are:

Material	Average Dry Density ton- nes/m ³	Within-lab Std Deviation, S _r	Between-lab Std. Deviation, S _R	Repeatability, r r \approx 2.77 S _r	Reproducibility, R
TNZ2	2.175	0.028	0.054	0.078	0.151
TNZ6	2.242	0.028	0.076	0.078	0.212
GAP1	2.232	0.017	0.045	0.048	0.125
GAP4	2.222	0.016	0.048	0.046	0.133

For water content, the reproducibility and repeatability values for dry density are:

Material	Water Content %	Within-lab Std Deviation, S _r	Between-lab Std. Deviation, S _R	Repeatability, r r \approx 2.77 S _r	Reproducibility, R
TNZ2	1.983	0.079	0.092	0.222	0.258
TNZ6	4.853	0.316	0.798	0.885	2.233
GAP1	1.091	0.093	0.158	0.260	0.441
GAP4	3.735	0.083	0.187	0.232	0.523

The full report with CETANZ commentary should be available soon.

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- Standard Penetration Test (SPT)
- Instrumentation installation piezometers, gas & water wells



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Working height	2.85m
Width	0.8m
Overall height mast down	1.5m
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Total weight	1300kg plus a 7000kg reaction load
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Issue 005, December 2008

Technical group update....con't

Benkelman Beam Proficiency

IANZ has been encouraging laboratories to undertake a Benkelman Beam Proficiency test for a couple of years especially after the successful Proficiency Test coordinated by Toni O'Regan of City Care Laboratory in Christchurch.

The plan was to identify a few test points and have 10 repeat testing conducted on each spot to give repeatability as well as reproducibility data. Three test sites (points) were identified and marked in the Auckland Domain giving approximate deflections of 0.5mm, 1.0mm and 1.5mm. Seven Auckland and two Hamilton laboratories agreed to participate and perform the testing within a two week window from 6th to 20th June 2008.

We were fortunate during this period as the weather was reasonably stable – not long after we had the "Auckland Big Wet of 2008" arrive, which may have affected the data.

The whole process went reasonably smoothly, though there are always the inevitable misinterpretations and "odd" results.

Overall the data was also more repeatable and reproducible than expected. Thanks to all those laboratories who participated.

CETANZ Proficiency Testing Program

The next Proficiency Rounds that are in the planning stage are:

SoilsPlasticity, Moisture Content and Linear Shrinkage. Coordinated by John Evans at OPUS Auckland.

Aggregates ...Weathering Quality Index and Crushing Coordinated by Stevenson Laboratory.

At this stage things seem to be going slow so we NEED your help ... the more laboratories that are willing to help coordinate and distribute the more schemes we can run......

We are also looking to the regions to run area specific rounds. e.g. a Benkelman Beam round in the South Island..... or an NDM in the Bay of Plenty.

So please contact the Technical Group to volunteer.

Industry Representation – Funding for Standard Review

As we have had a change of government and there has been talk of a change in the funding structure of some government agencies (See Nick Smith's and Keith Towl's speeches at the conference) there may be funding available from the government to update our standards. The CETANZ Technical Group will make enquiries to the relevant departments and look to carry out some lobbying on behalf of our industry in this area.

Standards are expensive to review but vital to the ongoing economic development of the country. We cannot go forward if we are stuck using methodology and standards from the 80's. Watch this space!

Technical Support – Uncertainty of Measurement Technical Workshop

It has been suggested that the members of CETANZ might benefit from some kind of easy-to-read guidance document to help Laboratories with their Uncertainty calculations. The CETANZ Technical Group will be working on producing a document along with some kind of follow up workshop.

From the groups...Society Activities

With the very successful CETC 2008 conference consuming much of the Society Activities working group's time, there has not been much room for anything else in 2008. Again, many thanks to all those who helped organise CETC 2008. For the coming year, the focus for the Society Activities working group will be in the regional areas. These regional get togethers will be a great opportunity for socialising and will also involve training and technical aspects.



Independent Testing Services

THE AUCKLAND LABORATORY

The Auckland Laboratory rigorously maintains an **independent** and **unbiased** testing facility for our clients as part of our IANZ requirements where: accuracy, confidentiality and customer service are of the utmost importance to us. We have a broad range of clients in both private and public sectors and are happy to assist even if only for **impartial advice**.

The laboratory is **IANZ accredited to NZS/ISO/IEC 17025** for mechanical testing under the areas: 4.01 Aggregate, 4.02 Bituminous Materials, 4.08 Soils, 4.15 Operations by Seconded Personnel and 4.20 Pavement Testing; the scope covers a wide range of national and international test methods. The separate specialist laboratory in Tauranga offers a comprehensive suite of performance assessment and test methods for emulsions and binders.

We are available for **Research and Development** work for both design of and assistance with projects for clients. We have the expertise to arrange and provide advice on a wide range of materials testing and assessment requirements, not covered on our standard scope, either in house or through collaboration with other test facilities, these could be: accredited / non accredited testing or **bespoke options** designed specifically for the client. We are happy to discuss individual requirements.



For more information or to arrange a visit please contact either, Phil Archer, David Aubrey or Howard Jeffery-Wright at *The Auckland Laboratory*—

Phone: Office +64 (0) 9 580-2494

Mobile: Howard +64 (0) 276 837 681 David +64 (0) 272 427240 Phil +64 (0) 272 434813

Email: Aucklandlaboratory@downerediworks.co.nz



Proudly Supporting



Issue 005, December 2008

Even more from the technical group...Rubber Caps

Technical Support - Rubber Caps NZS 3112.2

Brigitte Sargent from Geotechnics Sales has raised an issue with the Rubber Caps used to test Concrete Cylinders for compression. It appears that some of the Rubber Caps coming into NZ are not compliant to the standard depending on how you interpret the test method. CETANZ is looking into this, and the Australian and ASTM standards, and will report back to the members in the next newsletter. In the mean time we recommend you check your calibration certificates and let CETANZ Technical Group know if you think you have non compliant caps.

Brigitte asked NZ Standards the following

"Can you please confirm how NZS 3112 part 2: 1986 Amendment No. 2, July 2000 sub clause 4.4.3.1 should be read(c) natural rubber as described in AS 1523 with a nominal Shore A Durometer hardness of 50 to 65.......If you take emphasis on 'nominal meaning' around 50 to 65, this would mean that 67 or 68 shore hardness is fine. However if you have emphasis on 50 to 65, which is a tolerance, it means the available supply of these rubber caps is not fine. This is causing confusion and needs clarification please"

Standards NZ responded with

"We have now consulted a number of the technical experts involved in the development of this Standard. They have provided the following response: We believe the best approach would be to accept the ASTM quoted tolerance of +/- 5 on the figures quoted in 3112. I suppose we are saying that we define "nominal" as +/- 5. This in effect means the numbers would be 45 as lowest and 70 as highest, or any manufacturer's number within 50 to 65, can vary by +/-5. Standards New Zealand will also ensure that this is added to the NZS 3112 file and that any future revision or amendment of the Standard will consider the ambiguity of this clause. I trust this now resolves your query. Jayden Ellis CETANZ Technical Group Leader jse@stevensons.co.nz info@cetanz.org.nz



I suppose we are saying that we define "nominal" as +/- 5. This in effect means the numbers would be 45 as lowest and 70 as highest, or any manufacturer's number within 50 to 65, can vary by +/-5.

News from the groups....Careers and Training

The Training and Careers group have been in talks with Infatrain and CETANZ has got their backing on trying to come up with a laboratory qualification that will be recognised by future employers.

In 2009 the training group will be busy achieving this and hopefully have something in place by 2010.

Eric Paton has sent out an email to Geotechnical Laboratories throughout New Zealand asking for their support on trying to achieve this.

If you did not get the email then please send Eric an email to <u>eric.paton@fultonhogan.com</u> and he will pass a copy on to you

Eric Paton-CETANZ Careers & Training Leader

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EARTHWORKS COURSES Efficient Compaction for

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This course was developed due to industry demand and can be tailored to suit both half and full day applications. If your business is about geotechnical work then this course is perfect for your technicians. Attendance at this course will give you the confidence that your staff are doing the right job!



For further information and bookings contact Stuart Moulding

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Issue 005, December 2008

Test Focus—How to use a sieve!

One of the most common tests performed in NZ laboratories is "Particle Size Distribution" or PSD. But are you or your staff aware of some of the different techniques involved with this 'bread n butter' test?

Read on!

Throw-action sieving



Here a throwing motion acts on the sample. The vertical throwing motion is overlaid with a slight circular motion which results in distribution of the sample amount over the whole sieving surface. The particles are accelerated in the vertical direction (are thrown upwards). In the air they carry out free rotations and interact with the openings in the mesh of the sieve when they fall back. If the particles are smaller than the openings, they pass through the sieve. If they are larger, they are thrown upwards again. The rotating motion while suspended increases the probability that the particles present a different orientation to the mesh when they fall back again, and thus might eventually pass through the mesh.

Modern sieve shakers work with an electro-magnetic drive which moves a spring-mass system and transfers the resulting oscillation to the sieve stack. Amplitude and sieving time are set digitally and are continuously observed by an integrated control-unit. Therefore sieving results are reproducible and precise (an important precondition for a significant analysis). Adjustment of parameters like amplitude and sieving time serves to optimize the sieving for different types of material. This method is the most common in the laboratory sector.

Horizontal sieving



In a horizontal sieve shaker the sieve stack moves in horizontal circles in a plane. Horizontal sieve shakers are preferably used for needle-shaped, flat, long or fibrous samples, as their hori-

zontal orientation means that only a few disoriented particles enter the mesh and the sieve is not blocked so quickly. The large sieving area enables the sieving of large amounts of sample, for example as encountered in the particle-size analysis of construction materials and aggregates.

Tapping sieving



A horizontal circular motion overlies a vertical motion which is created by a tapping impulse. These motional processes are characteristic of hand sieving and produce a higher degree of sieving for denser particles (e.g. abrasives) than throw-action sieve shakers.

Sonic sieving

The particles are lifted and forcibly dropped in a column of oscillating air at a frequency of thousands of cycles per minute. Sonic sievers are able to handle much finer dry powders than woven mesh screens.

Wet sieving

Most sieve analyses are carried out dry. But there are some applications which can only be carried out by wet sieving. This is the case when the sample which has to be analysed is e.g. a suspension which must not be dried; or when the sample is a very fine powder which tends to agglomerate (mostly < 45 μ m) – in a dry sieving process this tendency would lead to a clogging of the sieve meshes and this would make a further sieving process impossible. A wet sieving process is set up like a dry process: the sieve stack is clamped onto the sieve shaker and the sample is placed on the top sieve. Above the top sieve a water-spray nozzle is placed which supports the sieving process additionally to the sieving motion. The rinsing is carried out until the liquid which is discharged through the receiver is clear. Sample residues on the sieves have to be dried and weighed. When it comes to wet sieving it is very important not to change to sample in its volume (no swelling, dissolving or reaction with the liquid).

Source: http://en.wikipedia.org/wiki/Sieve_analysis

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Member Profiles

This issue....Grant Bosma from Fulton Hogan Corporate

1. Who do you work for, where and what is your role?

I work for Fulton Hogan. While I'm based in Nelson, I work for the corporate office in a technical support role, particularly in respect of asphalt and other road surfacing materials.

2. What would you like to gain from a membership with CETANZ?

I've been involved with the civil and bituminous materials testing industry for over 27 years. I'd like the opportunity to contribute back into the industry, maybe through training, standards review, mentoring, technical papers etc. It's a great industry and I'd like to encourage people to have a long-term career in the materials testing field.

3. How will you spend your time away from work this Christmas?

By not working! I plan to stay around Nelson and enjoy the great lifestyle the region offers.

4. What is the most funny or entertaining moment of your career?

Nothing comes to mind. It's been an interesting ride so far!

5. If you could offer a newcomer to the testing industry one piece of advice what would it be?

To stick with it. The work that we do in the background ultimately contribute significantly to the development if New Zealand's infrastructure. I think that's pretty important.



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Standard Alert!

The following standards are up for review......

NZS 3122: 1995 & NZS 3123: 1974:

Amendment of NZS 3122: 1995 Specification for Portland blended cements (General and special purpose)and revision of NZS 3123 Specification for Portland pozzolan cement (type PP cement). The technical committee is being formed. CETANZ will most likely not need to comment on this standard.

NZS 3116: 2002:

Revision of NZS 3116: 2002 Specification for Segmental Pavers. CETANZ has made comment on behalf of the testing industry and a Post Public comment meeting was held in November. The P3116 committee contacted CETANZ to discuss our comments and it looks like the P3116 committee will be taking on some of our suggestions. Please contact Jayden for a copy of our comments.

RNZ 9805: 2007:

Draft Guidelines for the quality Assurance of Aggregates for Roads. This document has been circulating for a couple years now. RNZ has decided to complete the review in conjunction with the AQA and the Minerals Industry Association. CETANZ will make comment and sit in on meetings held between the AQA and RNZ. The guideline is meant to promote good quality assurance practice, which in turn promotes the use of accredited testing facilities and correct testing methods. Please contact Jayden if you would like to share your comments.

New Zealand guideline for sampling and mix design testing for stabilisation of pavement layers :

Some of this guideline was presented by *Thorsten Frobel* at the CETANZ conference in September. Some feedback was given to Thorsten from our conference and a select group from industry.

At this stage the Stabilisation Working Group (SWG)

discussed the Guideline at the last meeting. The outcome was that an "overview" flowchart will be included. Generally the inclusions from industry were accepted and will be included in the next draft. More progress should be made at the next meeting where some of the detail can be discussed.

CETANZ is pushing to have recognised test methods quoted for standardisation and separate guidelines for Insitu and In Plant modifications.

Please contact Jayden for a copy of our comments.

Want more info go to <u>www.standards.co.nz</u> and click on the "Public Comment" Tab. Here you can download the draft version for an 8 week period and submit your comments.



www.cetanz.org.nz

From the Editor...

CETANewZ is the voice for our industry. If you would like to contribute in any way to this publication by way of adverts or articles - drop us a line at

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Meet the new committee members...

Careers & Training

Meet Eric Paton from Fulton Hogan Auckland

Name: Eric Paton

Company: Fulton Hogan

Position: Assistant Laboratory Manager

Number of years in testing industry: 17 years

Background: I started working for a large Civil Engineering company in the Scotland after leaving high school as a trainee laboratory technician. I was mostly testing concrete and aggregates. After the contract finished I was transferred to England doing the same thing. At the end of 1995 I was offered a job on the new Hong Kong airport Chek Lap Kok by Materilab which is owned by Fugro. After spending over 2 years in Hong Kong I took 1 year off and travelled to Australia and New Zealand. I then headed back to the UK and worked on many projects throughout England and Wales testing all sorts of material. In late 2005 I was offered a position by Fulton Hogan to join their laboratory team in Auckland and this is were i am today.

Spare time: I try and do the gardening and I do some on and off road running and hopefully one day do the Speights Coast to Coast in the south island. I have started playing golf but I need more practice.

Society Activities

Meet Jennie Dingley from Envirolab Geotest

Name: Jennie Dingley

Company: Envirolab Geotest Ltd

Position: Manager - Geotest

Number of years in testing industry: 4

Background :I completed a MSc in Geology in 2002 and promptly found work with a food and dairy testing laboratory. Here I learnt the ins and outs of fat and protein testing and gained an understanding of laboratory quality procedures. From there, I accidentally discovered the civil engineering testing industry, like many technicians, by joining Geotest in 2005. I am currently the manager of Geotest, the geotechnical testing laboratory of Envirolab Geotest Ltd. My role includes laboratory testing; management of the technical, IANZ and day-to-day requirements for the laboratory and training of staff. Geotest offers testing services for soils, aggregates, concrete and a range of field tests.

Spare time: What I do when I am not at work: I collect MG cars with my partner, enjoy the occasional drink and certainly enjoy good weather and good company, when time permits.



Santa's sexual harassment trial takes a dramatic change for the worse

CETANewZ

STEVENSON

Situations Vacant

SECTION LEADER

Masonry, Paving & Concrete Testing.

Our IANZ accredited laboratory based in Drury, is seeking applicants to undertake a Senior Technician role responsible for the testing of Concrete and Masonry. We are looking for someone who can supervise & coach staff and who has knowledge of civil engineering construction materials or fresh and hardened concrete testing.

Ideally you will:

Have completed a Civil Engineering or Science based qualification; Have 3yrs minimum experience in a testing laboratory. Have knowledge of Construction materials and Concrete testing. Have good mathematical, oral, and written communication skills; Have experience with computers, specifically with using Word and Excel; Have experience with supervising & coaching staff. Be physically fit & mobile, as the job involves some heavy lifting; Enjoy the challenge of meeting deadlines even if it means working additional hours. Be legally able to work in New Zealand.

We offer an interesting and varied work environment coupled with an attractive remuneration package and company vehicle. If this sounds like you, then please forward your CV to the HR Advisor, at the following address, quoting Job Ref LB241. Please note that a pre employment medical examination including a test for illegal drugs will be required.

LABORATORY P.O. Box 15 Drury 2247 Auckland, New Zealand FAX: 09 984 8873 EMAIL: <u>recruitmentHR@stevensons.co.nz</u>

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The salary is negotiable. The candidate should send us his/her salary

expectations along with a detailed CV and his/her contact details so that we can get in touch with him/her if he/she is interested.

Tasks:

- Building up and managing material laboratories for soil, minerals and asphalt
- Preparation and optimization of asphalt mix design in consideration of technical and economical requirements
- Performance of quality monitoring for road works in accordance with local and international standards

Requirements:

- University degree or technical college in the field of civil engineering, preferably with focus on construction material technology
- At least 5 years professional experience in the field of asphalt and concrete technology
- Negotiation skills
- Competence in communication and leading multicultural teams

Potential applicants should Contact Harald Harsveldt, in the first instance, with their CV and earliest availability by E-mail with complete contact details (including Name, Address, and contact phone numbers).

> Contact: Harald Harsveldt Mobile: (0294) 505 515 Office: (04) 566 0266 Email: mats-ltd@paradise.net.nz







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Crossword corner....

Geology and Earth Sciences

Howard Jeffery-Wright

CETANZ news article crossword



Answers from last issue >>>



Angle Intersection measured by degrees Element Substance that cannot be split into a simpler one by ch Barium Atomic number 56 Fractal Geometrical repetitive figure Force on an objects surface divided by the area Pressure Sulphate Salt of Sulphuric acid Homogenization Process to distribute a substance evenly in a fluid Magneto Device to convert mechanical energy into HV ac Momentum Product of mass and linear velocity Vulcanization Chemical process to improve rubber compounds Zero That number which, when added to any number 'x' leav Acoustics Study of sound This is measured in farads Capacitance Histogram Bar chart Energy Capacity for doing work, measured in joules Hydrometer Instrument for measuring density of a liquid Isotropic Means having the same physical properties in all direct Megabyte 1024 kilobytes

His cat in a box was famous

Schrodinger

CETANewZ

Across

- Fine-grained volcanic rock, named after a range of mountains
- Branch of geology looking at deposited layer sequences
- 11. Study of occurrence and flow of groundwater
- 12. Frederick **** scale of hardness
- 14. Hydrosphere, Atmosphere, Biosphere and *********
- The molten silicate form of this is most common
- Structure marking a break in time in deposited rock layers
- Usually dark gray sedimentary rock with poorly sorted particles

Down

- 1. In minerals crystals split along this line
- 2. A famous park made this period popular
- 3. Fastest of the vibrating earthquake waves
- 5. A gradient of temperature change
- 6. Class of rock having undergone change
- Phenomenon used to identify minerals under polarized light
- Clay and Mica are a member of this group of sheet minerals

Clue

- 10. Oceanic equivalent of topography
- Sedimentary rock formed from precipitation of a salt
- 15. Organic component of a soil
- 16. A Southern Fox is one of these
- 17. Zone between the crust and core

AT THE OFFICES OF ACME TESTING ... DON'T WORRY, OUR EXPERT'S ON HIS WAY TO SITE! IN BRAND NEW! M LATER ٢ Ò 0 LUCKILY, GEOTECHNICS OFFERS SALES AND COMPREHENSIVE TRAINING!



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- Tension machines
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- Load cells
- Proving rings

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Our laboratory is IANZ accredited and our team of experienced technicians is committed to providing a range of quality services.



The Measurement & Calibration Centre



