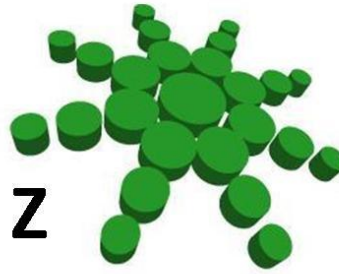


**CETANZ**



Civil Engineering Testing Association of New Zealand

# NEWSLETTER

The official newsletter of the Civil Engineering Testing Association of New Zealand

Issue 32

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- Committee Round-Up
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June 15, 2018 | ISSUE 32



# Update from the Chair

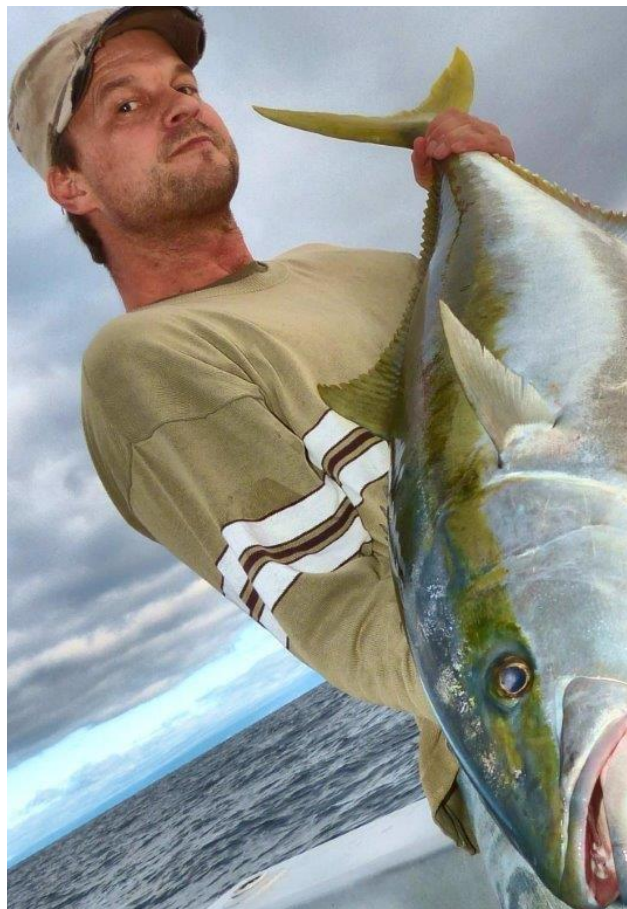
Hello and welcome to the June edition of CETANewZ for 2018.

It has been a hectic 2018 so far, with a surplus of H<sub>2</sub>O and general disruption to construction. That being said, a lot has been achieved by teams in all sectors.

Careers and events are looking at having a site visit to Winstone Aggregates laboratory and a tour of their Hunua Quarry so stay tuned for that.

Planning for this year's conference in August is well underway. We have a theme, 'Testing smarter not harder: The next generation'. This is a fairly broad theme based around new tests, new/ safer ways to do tests and also around trying to offer a career path for young technicians to aspire to.

There is a website, [here](#), updates will be made as they come to hand. Papers and speakers are encouraged to speak on theme but topics of general interest such as reports on RONS projects such as we have had in the past have always proved popular.



At our last *full committee meeting* we worked through a long list of action items that we continue to chip away at. If any members would like to attend a committee meeting, please contact Sarah Amore to see what can be arranged. It is always good to hear other people's ideas and perspectives.

*The CPT group* has made fantastic progress since the last newsletter. Graeme Dusky was voted on to undertake the initial auditing process for CPT member's with Allan McConnell from Australia providing support for the first few. This has taken a lot of organisation to get to where we are now and the committee would like to thank the auditing team and member organisations involved for their efforts so far. We will send out feedback forms once the process is complete for this round. From here, there is a pretty clear timeframe in place moving forward for this the date that sticks out being July, when it is intended to have the draft best practice document completed.



## Continued...

The *Careers and events group* have been focusing mainly on the large task ahead of hosting the conference but discussions have also been held around the 2 new awards that are set to be presented at the conference. Look out for the criteria involved in nominating people for these later in this edition

The *Technical group* are still busily working on a number of tasks including proficiencies, NZS4402 update, Density and Absorption SSD guidelines, NDM calibrations, Vibe Hammer alternatives/ fixes and in conjunction with the NPTG, the new draft for TI 1977 (Benkelman Beam Testing).



Regards,  
Danny



# Conference Update

What an exciting time we are in! The Conference committee have been busy organizing the 6th biennial CETANZ Conference hosted at Auckland Heritage Hotel, 9-10 August, 2018.

The theme of Testing Smarter Not Harder: The Next Generation has been well received and we are thrilled to announce an excellent lineup of speakers. Discussions are tailored to suit varying aspects of Civil Engineering Testing. Including, field & laboratory testing, CPT, advancements in techniques and the opportunities for emerging professionals in the industry. There is something for everyone and a sure highlight in your calendar this year!

With the early bird price change fast approaching – we encourage you to make the most of the discount and register yourself and your team before, Monday, 2nd July.

**[REGISTER HERE](#)**

Nominations for CETANZ Awards are open! Please continue to send through your nominations in PDF format to [info@cetanz.org.nz](mailto:info@cetanz.org.nz). CETANZ Awards are a highlight for many, recognizing quality, innovation and continual progress within the industry.

We look forward to seeing you all in August!

John King  
Conference Convener

INTRODUCING 2018 CETANZ CONFERENCE SPEAKERS:

For the full program and speaker abstracts this year, please visit [cetanzconference.org.nz](http://cetanzconference.org.nz)

KEYNOTE: HONOURABLE PHIL TWYFORD Minister of Housing and Urban Development and Transport.

KEYNOTE: STEPHEN SELWOOD CE of Infrastructure New Zealand.

KEYNOTE: SUSAN FREEMAN-GREEENE CE of Engineering New Zealand.

DINNER SPEAKER: STEVE GURNEY Nine time Coast to Coast winner, entertainer, adventurer, inventor and motivator.

MASTER OF CEREMONIES: BRUCE HOPKINS Famous for his portrayal of 'Gamling' in The Lord of the Rings film trilogy.





# Committee Round-Up



## **Danny Wyatt | CETANZ Committee Chair**

Danny became a committee member in 2014, and has been a member of CETANZ since its humble beginnings.

For the last 7 years, Danny has been working with GBC Winstone, as Lab manager to the many nationwide labs. Prior to that he ran the

AECOM NZ national lab as well as practicing Engineering Geology. He enjoys seeing employees progress and succeed - he is passionate about careers in testing.

Danny plays touch rugby and enjoys spending time with his family, hunting, diving and fishing - which can be contradictory at times!



## **Jayden Ellis | Technical Group Leader and Immediate Past CETANZ Committee Chair**

He has been with the company for 22 years. Jayden has gained most of his experience working in the Stevenson Civil Laboratory which works closely with Quarry, Masonry, Concrete and Contracting operations. He completed his NZCE (CIVIL) in 2001.

Jayden is also Vice Chair of the Aggregates and Quarry Association (AQA) and a member of the following Technical Groups: AQA and NZRMCA along with NZTA's National Technical Pavements Group.

In 2009 he became a life member of CETANZ and is the current Technical Group Leader and Immediate Past CETANZ Committee Chair.

In his spare time he enjoys fishing, boating and renovation of his old farmhouse and tractor.



### **Sarah Amoores | Secretary of CETANZ**

Sarah manages the Opus Hamilton Laboratory, which she has been doing for the last 8 years. Prior to that has spent some time with Opus as an Engineering Geologist and Laboratory Technician. Sarah enjoys all aspects of site investigations, new techniques and likes getting her hands dirty.

Her passion is from a geology background, having completed a BSc (Earth Science) degree at Waikato Uni.



### **Brigitte Sargent | CETANZ Newsletter Editor and Treasurer**

Brigitte has worked in the Civil Testing Industry for over 20 years and is the National Manager for Geotechnics Sales Division and The Measurement & Calibration Centre (a division of Geotechnics). She has been a member of CETANZ since its beginning stages and served on the first committee.

Her current roles in CETANZ are Newsletter Editor and Treasurer.

Brigitte thoroughly enjoys the industry and working alongside all the people in it. Her goal is to assist CETANZ into developing a strong industry for future generations.

Outside of work she enjoys spending time with her family and horses.



### **Steven Anderson | Committee and Technical Working Group Member**

Steven is the Auckland Regional Manager for Geotechnics Testing Operation. Steven started his civil engineering testing career with Geotechnics a year after completing an Earth science degree at Waikato University. He initially performed concrete and aggregate testing, but has since added soils and geotechnical testing.

Steven convened the first Civil Engineering Laboratories Conference in 2006. His involvement in the creation of CETANZ and contribution to the industry resulted was recognised by being made a CETANZ Life Member in 2009. He was also part of the Connexis (now Connexis) Industry Advisory Group developing the laboratory technician qualifications. Steven continues to serve as a Committee and Technical Working Group member. Steve's spare time is taken up with family, fresh and saltwater boat fishing, the odd bit of home renovation and the occasional hunting trip.



### **Frank Hu**

Frank works for Downer NZ Auckland Laboratory. He has worked in various civil material testing laboratories as technician, team leader, supervisor, section head and lab manager in Auckland for last 15 years involving in aggregate, concrete, soil, environmental, asphalt and bitumen tests.

Frank was trained as a mining engineer and worked in the controlled blasting area for 10 years before moving to New Zealand - the last paradise in the world as they say.

He has 2 teenage children and likes watching his favourite rugby teams play, i.e. The Blues, Auckland and the Warriors.



### **John King**

John came aboard the CETANZ committee in 2014, he currently works with Geotechnics in Auckland supplying laboratory, and field testing equipment to Engineers and Geotechnical groups around New Zealand and the Pacific.

In his spare time, John partakes in a range of sports such as football, cricket snowboarding and mountain biking. He also enjoys spending time outdoors tramping and fishing.



### **Corey Papu-Gread**

Corey is the manager for the Christchurch branch of Geotechnics. Corey has carried out civil engineering field and laboratory testing over a period of 7 years throughout Australia and New Zealand. Corey became a committee member in 2016.



# Proficiency Testing

## **An Important Reminder From the Technical Group**

Please keep in mind that any Civil Laboratory with CETANZ members who are willing to organise and run national proficiencies are welcome to contact the CETANZ Technical Group.

CETANZ have budgeted funds to be used to reimburse those labs that run approved proficiencies.

There is a process to follow and anyone wanting to know more should contact Jayden Ellis [info@cetanz.org.nz](mailto:info@cetanz.org.nz)

# Nominations for CETANZ Awards

## **CETANZ Emerging Technician Award**

The CETANZ Emerging Technician award recognises excellence from up and coming individuals who stand out amongst their peers with respect to technical knowledge, client focus, innovation and leadership in the Civil Engineering Testing Industry.

[Full Info and Nomination Criteria](#)

## **CETANZ Technical Excellence Award**

The CETANZ Technical Excellence award recognises excellence from an individual or collective laboratory in technical and/or quality achievement with respect to innovation in technical methods, equipment, quality, processes or technology in the Civil Engineering Testing industry.

These awards are presented every two years with three placings of Gold, Silver and Bronze as well as recognition of finalists. These awards will be presented at our conference dinner in August.

[Full Info and Nomination Criteria](#)





# IGS Report on Cone Heating Effects

The article below is from the team at IGS

## **TEMPERATURE EFFECTS ON CONES – “THE ELEPHANT IN THE ROOM” a modified and “sanitised” internal IGS memo about a problem we had and solved in 2017**

IGS did some CPTu testing at a preloaded soft soil site in Australia in 2017. A short time after that work the (very knowledgeable and concerned) client raised questions and doubts about some of the data from that testing.

This particular testing was being used by the client to track progress of a preload, and the 2017 test results, compared to some earlier IGS tests (done in 2006), indicated inadequate strength improvement compared to the before-pre-loading strength .

The client was correct to raise the matter. There were indeed problems with the data. We encourage clients to check data and speak up if they are ever concerned or confused.

IGS hypothesised that the problems may be related to temperature change effects in the CPTs. All CPTs used by IGS are "temperature compensated" according to the manufacturer but we had noted from time to time that "what may be transient temperature effects" were happening. We had typically previously seen this in CPTs that we pushed through strongly cemented or very dense sand into soft stuff.

By coincidence IGS, in the same period as these original tests, was engaged to undertake testing at an overseas site on which some semi-active volcanic action was underway. On this site elevated ground temperatures were expected and we had already undertaken some in-house cone calibrations under controlled temperatures up to 80°C.

The results of these calibrations-for-the-volcano-tests showed that the cones remained well-enough calibrated under every temperature to still lie in the calibration target that we aspire to - that designated by ISO 22476-1-201 as "Application Class 1".

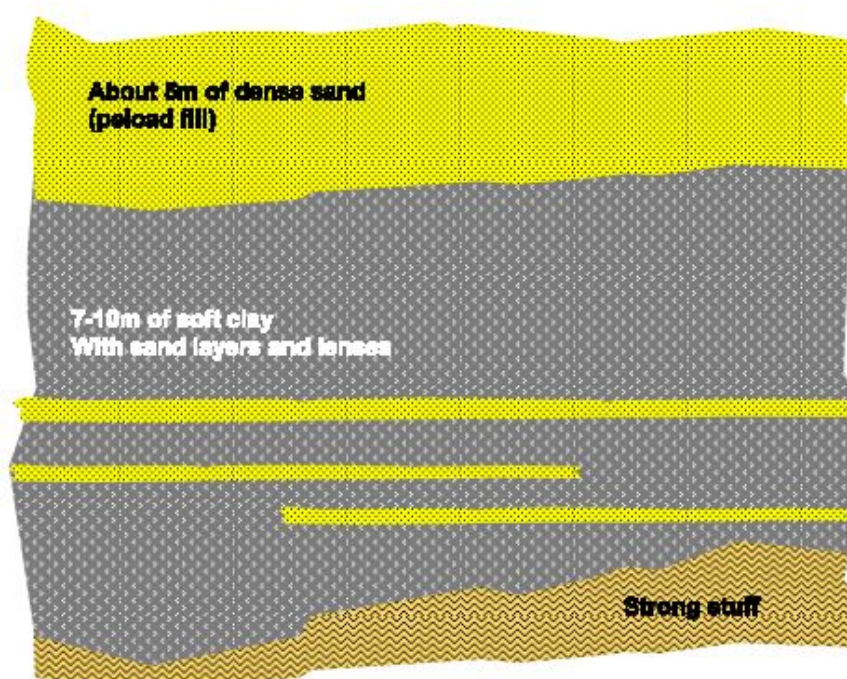


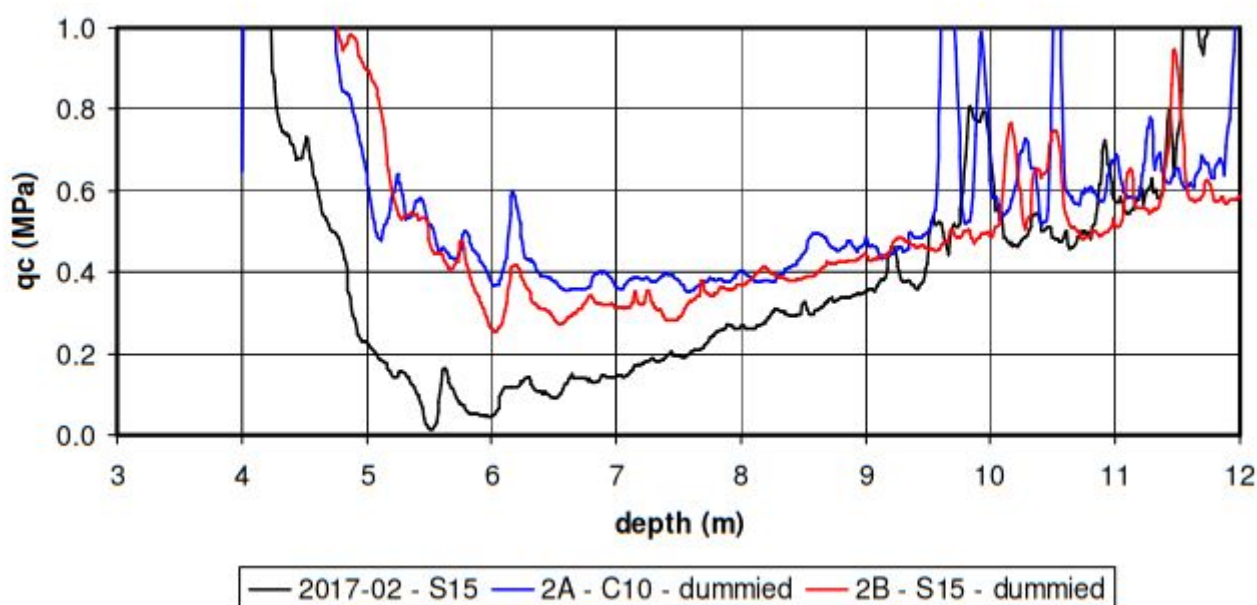
# Continued...

The tests did however certainly show drift during the temperature changing period. For the 10cm<sup>2</sup> compression cones we calibrated this way (we call them C-10s) this drift was 90-150 kPa and for the 15cm<sup>2</sup> cones (we call them S-15s) the drift was 120-200 kPa. These tests were made at a tested qc of about 20 MPa and thus the drift was deemed insignificant (at that time, for that particular project) - it was in the range 0.45-0.75% and 0.88-1.46% respectively compared to the test qc values that were to be expected on the job. We were very pleased with the result. The qc we were calibrating at suited the job and the %-shift still kept the cones' accuracy in the target range at all times.

After our client-with-the-preload raised their concerns, we undertook some more testing for the client at that site using C-10 cones pushed from the bottom of holes that we made by testing (more-or-less dummies through) with S-15 non-piezo cones. The C-10 test results were very different to those of the earlier testing and this time satisfied the client's expectations and needs.

Because we were concerned about this, IGS continued on and did some more comparison testing, for our own purposes and education, which is described in the following two pages. This proved that temperature-change effect had been the "elephant in the room" on that project; the cones were heating up as they penetrated the dense sand, then cooled down over a few minutes in the soft layers below that. As they were cooling they were "reading low" – by enough that the errors were very very significant in the qc range that mattered on this job. As an aside, we also noticed that it took longer for the S-15s to stabilise than the C-10s, possibly because there is "a lot more solid metal" inside an S-15.





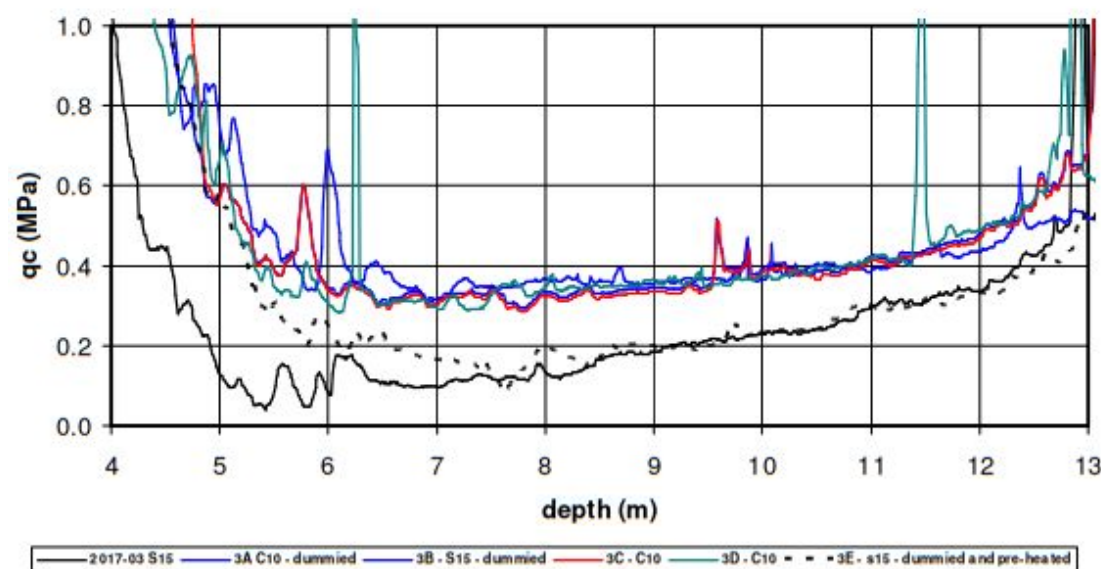
## CPT COMPARISONS - LOCATION XXXX

### NOTES

1. Test 02 was pushed using an S-15 cone. It was pushed from surface, through about 4m of sand.
2. Test 2A was pushed using a C-10 cone. It was pushed from 4m depth from the bottom of a dummied hole.
3. Test 2B was pushed using an S-15 cone. It was pushed from 4m depth from the bottom of a dummied hole.

My conclusion from this is that the original push at this site was affected by heating up due to pushing through dense sand. The "errors" due to this became progressively less with depth as the heated cone was cooling down over about 5m of push through the soft clays below the sand.

The strain gauges in all of these cones are temperature-compensated Wheatstone bridges - but it is apparent/obvious that during temperature transition the compensation is ineffective.



**PORT WEST PRELOAD  
CPT COMPARISONS -  
LOCATION YYYY**

## NOTES

1. Test 03 was pushed using an S-15 cone. It was pushed from surface, through about 4m of sand.
2. Test 3A was pushed using a C-10 cone. It was pushed from 4m depth from the bottom of a dummied hole.
3. Test 3B was pushed using an S-15 cone. It was pushed from 4m depth from the bottom of a dummied hole.
4. Tests 3C & 3D were both pushed using a C-10 cone. They were both pushed from surface, through about 4m of sand.
5. Test 3E was an S-15 cone that had been preheated in near-boiling water before the push. It was pushed from 4m depth from the bottom of a dummied hole.

My conclusion from this is that the original push at this site was affected by heating up due to pushing through dense sand. The "errors" due to this became progressively less with depth as the heated cone was cooling down over about 7m of push into the softer clays below the sand. This effect was confirmed by the final 3E push that had been preheated but then pushed down a dummied hole. This showed very similar behaviour to test 03. This confirmed that temperature shift has been the problem with the original tests. IGS will need to take this more into account on future projects

The strain gauges in all of these cones are temperature-compensated Wheatstone bridges - but it is apparent/obvious that during temperature transition then compensation is ineffective.





# Incident Alert: Winter Driving

The incident report below is brought to you by the team at Broadspectrum

## Incident Title:

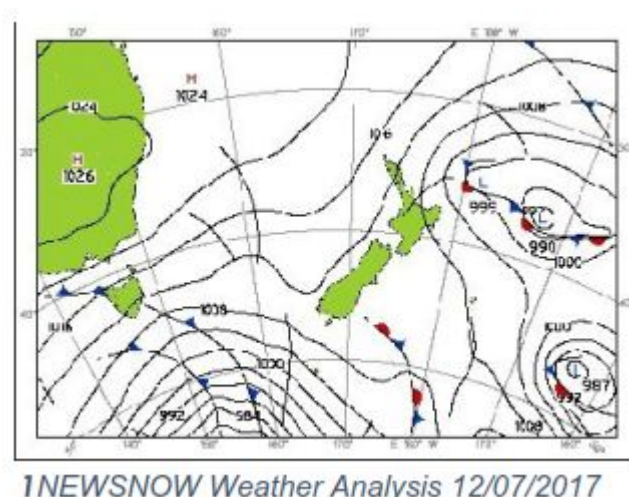
Winter Driving Conditions (Black Ice)

## Date of Incident:

Wednesday 12 July 2017

## Incident Description and Details:

A worker travelling between Tekapo A and B struck black ice causing the vehicle to spin off the road. The driver was unharmed.



With the present weather conditions throughout NZ, drivers need be aware of the road conditions and plan appropriately.

## Recommendations / Lessons:

In brief take into account the following:

1. Consider if you really need to travel, especially if the weather is poor.
2. Plan your journey.
3. Drive slower than you normally would – it only takes a split second to lose control in wet or icy conditions.
4. Avoid sudden braking or turning movements that could cause you to skid.
5. Look out for shaded areas caused by high banks and tall trees where roads freeze sooner and ice may not thaw during the day.
6. Bridges could also stay slippery longer than other road surfaces, so slow down when crossing them.



# Continued...

**For more information see the following:**

<https://www.nzta.govt.nz/safety/driving-safely/winter-driving/>

<https://www.aa.co.nz/travel/roadwatch/>

**Contact Person:**

Jim Hastie Regional Manager Southern 0273153012

**GLOBAL SERVICES USE ONLY**

**Date of Incident Alert issue:** 12/07/17

**Alert Number:** 120717



# Bitumen Handling

**The article below on Bitumen Safety is brought to you by the team at Fulton Hogan Ltd**

The Bitumen Critical Risk Group (BCRG) works to provide all staff that work with and around Bituminous Products on Fulton Hogan worksites, the correct tools, training and support to perform their tasks in the safest possible manner.

September is the time when we start to get ready for the new sealing season, and lots of other work that involves bituminous products. Sealing crews get lots of information, but any work involving bitumen affects everyone else in the vicinity.

**Fulton Hogan's Golden rule is:**

**When working with bitumen, you must wear Bitumen PPE**

For further details, Fulton Hogan's Bitumen Product Handling Personal Protective Equipment (PPE) Standard is available on theHub.

But it is just as important that our staff have the correct training to work with the products used in this area of our business.

## **August 2017 Tailgate Requirements**

Please discuss the resources on the following pages with your teams as part of your August tailgate and make sure your Tailgate meetings are recorded. Regional or Senior Project Managers are asked to confirm the close out of this requirement to their General or Executive Manager by 31 August 2016.

### Feedback or Incident Reporting

Do you have any of issues or incidents that the Bitumen CRG could help with, or we could share with others as good ideas? Please send us your experiences.

Always fill out an OFI for any incident or near miss, good or bad, or any good/smart idea.



# Continued...

Please give early notification to the BCRG for any incident relating to Bituminous Products, (pick up the phone) so that we can help with any investigations or advice and learn from your incident.

Warren Pickering 027 432 6941 Richard Shaw 027 435 0268

Always remember, PPE is only effective if it is worn correctly, and procedures are only effective if read, understood, and followed!

Regards,

Bill Caradus  
Bitumen Operations Manager  
On behalf of the Bitumen Critical Risk Group (BCRG).

## Bitumen Sprayer Fire

**In the early hours of Sunday 9 April 2017 there was a catastrophic fire in Fulton Hogan's Waikato yard.**

### Damage

2005 8x4 Multispray® - destroyed (replacement value): \$900,0000  
2013 4x2 first coat Multispray® - damaged: \$400,000  
4 axle bitumen trailer (No 1) - damaged: \$20,000  
3 phase power supply - destroyed: \$10,000  
Other yard and miscellaneous damage: \$20,000  
Lost profitability: \$200,000  
Estimated total damage: \$1.55M

### Ignition source

The fire was so destructive that it's been impossible to definitively determine the ignition source. However –  
Three possible causes and their likelihood have emerged:

- Arson - low likelihood
- Electrical fault - medium likelihood







# Continued...

- Self ignition of contaminated insulation - high likelihood

## **Contaminated insulation**

The following possible sources of contamination were identified:

1. An old sprayer - cleaned with solvents and occasional leaking valves during its 12 year life.
2. Leaking valves - repaired at the rear of the sprayer, within insulation, weeks before the fire.
3. Super Solve – a turpentine based cleaner used to clean tank cladding a week before the fire. This may have made way into the insulation material.

## **What can be done to prevent contaminated insulation?**

- Always have any leak checked and repaired immediately.
- Check where product may have leaked/spread to within insulation.
- Clean all surfaces and replace any contaminated material, no matter how minor, before replacing with new insulation.
- When cleaning equipment:
  - Always check that the cladding on your unit is intact and waterproof before applying cleaner.
  - Minimise solvent use, minimise quantity used (wipe on, wipe off), and don't force under cladding joints.



# Is Your Equipment Up to ISO9001?

Brigitte had a laugh at the sign below on a food truck trailer:







## Rocks vs. Vehicles



# CHECK



# YOUR TRUCK



## Wheels, Draw Bars & Tailgates



**CITY**EDGE



# HSQE Lessons Learnt – Rock Hits Vehicle

**The article and photos are provided by the team at City Edge**

**HAZARD:** Vehicle damage / Personal injury

**SUBJECT:** Rocks hitting vehicles on public roads

**INCIDENT DATE:** 06/11/2017

## 1. WHAT HAPPENED?

Vehicle travelling on SH1 between Tamahere and Hamilton sustained damage resulting in personal injury to the driver when a football sized rock flicked up and smashed the front windscreen.

Although this incident may not be directly related to the project this has happened previously in our industry and is a significant risk we must manage, as shown in pictures below:







# Continued...

## 2. WHAT CAUSES THIS TO OCCUR?

- Rocks lodged in between duals create excessive centrifugal force creating a potential rocket when released.
- Loose items left unmanaged on truck trays and drawbars.

## 3. WHAT IMMEDIATE ACTIONS NEED TO BE CONSIDERED ACROSS THE BUSINESS TO PREVENT IT

A SIMILAR INCIDENT HAPPENING AGAIN IN THE NEAR FUTURE?

- All trucks must be checked to ensure there are no rocks in between the duals, draw bars are clean and any

loose items are secure prior to exiting project sites and accessing public roads

# Know Your Load

Before leaving site

- Check your load is secure and will not move. If there is a chance of moving it is recommended you recheck your load after traveling 25km and regally after that
- Check you have no loose material that can come off your vehicle
- If you have dual wheels thoroughly check between them and have a bar ready to dislodge and thing you may find struck between them.

If you cannot get it out seek help. NEVER leave site with something lodged between your wheels





# Continued...

Check tyres are clear of site materials. Cheaper and easier to clean off wheel treads onsite than once it gets onto the road.

- If you are towing a trailer make sure all connections are good and no loose material on connection or drawbar.

## **As the driver you are responsible for your load.**

What the LAW says: (below is where you can find more information.)

- for trucks, heavy trailers or loads of more than 500kg you must read and understand Official New Zealand truck loading code:

**<https://www.nzta.govt.nz/assets/resources/roadcode/truck-loading-code/docs/tlc.pdf>**

- for cars, vans, station wagons, utes, 4-wheel drives and light trailers (vehicles whose maximum laden weight is less than 3.5 tonnes) or load weights less than 500kg

<https://www.nzta.govt.nz/assets/resources/glovebox-guide-safe-loading-towing/docs/guide-safe-loading-towing.pdf>

**loading-towing/docs/guide-safe-loading-towing.pdf**

## **Reduce the Risk and check your load is safe**





# Samples of Rocks on roads



All these rocks were found on the road near our entranceways today.  
All between 10-20 cm in length and 5-10 cm in height at their longest and highest points