

# #13

DECEMBER 2023

# iNFORMER

YOUR QUARTERLY NEWS & TECHNICAL UPDATE FROM INFORCE

**iNFORCE holiday period 19th Dec - 8th Jan**

**It's that time of year again where we start thinking about what's been achieved for the year to date and that old truism came to mind: you always overestimate what you can achieve in one year and underestimate what you can achieve in ten.**



Our long-term plan has always been to have a highly effective solution in each of the main pavement types (rigid, flexible & unbound) that allows us to optimise a pavement from both an engineering point of view and a financial one.

A solution, if it was to make the cut, had to meet a strict criteria and not just be another brief show and go like many things these days. We started the year launching the ACE fibre for asphalt which is something we have been watching with interest since 2017. With it now starting to be widely adopted in the North American markets, we decided the time was right to bring it down under and show how much of a game-changer this could be both environmentally (reduces carbon footprint by up to 96% compared to a PMB) It is extremely easy to use with no mix design changes required yet you are getting incredible performance bumps.

It was at the IPWEA conference on the Gold Coast where we were networking with local government, pavement engineers and other industry that we realised there was a serious conundrum being experienced by local government around poor subbase conditions and how to cost-effectively overcome constructing on poor soils. This resulted in a call to an old

contact of mine in a previous life that had a subbase solution that I knew was like no other geosynthetic in the market as far as performance goes. Formalities out of the way and by midyear we had our subbase solution in the form of Neoloy, rounding out our three solutions faster than we ever thought possible.

So, if we overestimate what can do in one year and underestimate what can achieve in 10, it could be an interesting 2043!

But it takes time and effort and an incredibly dedicated bunch of people to pull all this together and it's the iNFORCE team that makes it happen each and every day for our clients across Australasia.

If you've come to us to optimise a pavement this year – thank you. We hope we brought value to your project, and you have a piece of infrastructure that has superior engineering and cost you less to construct.

**Have a safe and happy holiday and here's to a great 2024!**

Kind Regards,

**Tom McGaveston**  
Managing Director

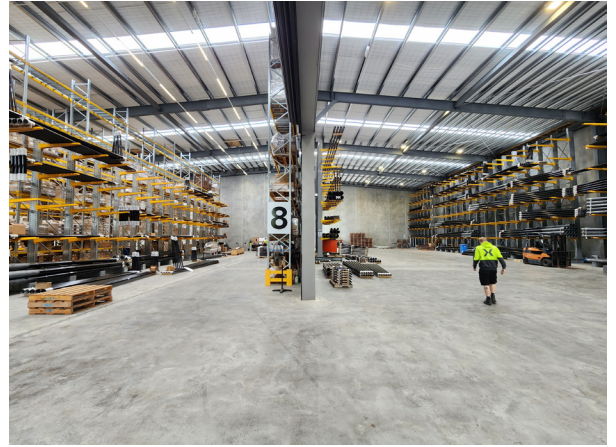




# PROJECT REVIEW IBEX LIGHTING

**The Ibox developer approached iFORCE to provide a fit-for-purpose design for this stunning new warehouse and office complex in the fast-growing Tauriko business park in Tauranga.**

iFORCE was asked to review an existing conventionally-reinforced floor in another building of theirs where the failed joints and structural cracking had caused significant disruption to their operations through maintenance and equipment damage. iFORCE provided a floor design that could almost completely eliminate disruptive maintenance. This was achieved by removing all saw cuts in the floor and armoring the control joints with the state-of-the-art Wave joint to create a large clear area for the company's materials handling equipment.

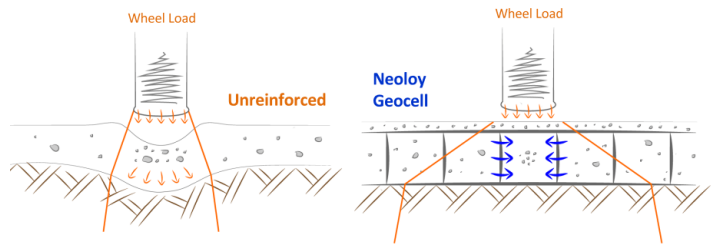




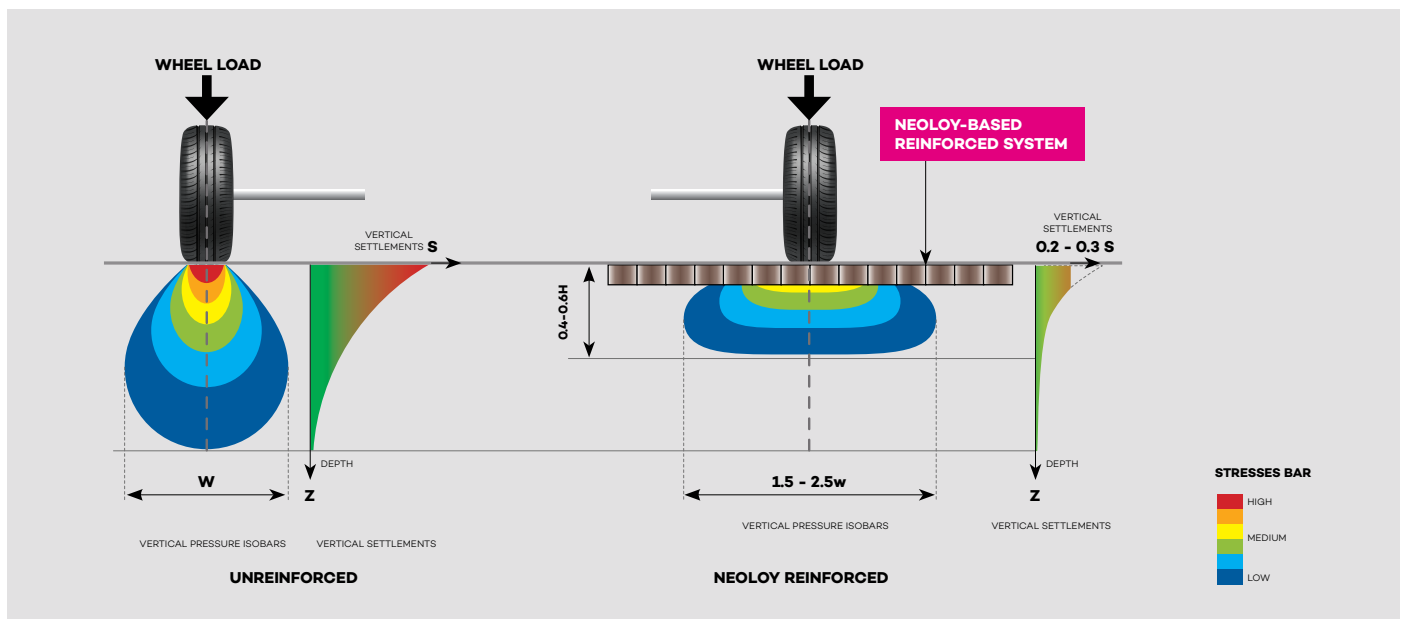
# LEARN WITH INFORCE NEOLOY LOAD DISTRIBUTION METHOD

Heavy vertical loads applied to poor soil can lead to failure of the existing soil (or subgrade) and the entire pavement structure above it. If the applied vertical loads on a road or platform are higher than the loads the existing soil can handle (known as bearing capacity of the soil), a shear failure of the ground surface layers will occur, up to a certain depth, which will cause the entire pavement structure (typically formed by the subbase, base layer and pavement surface in either asphalt or concrete) to sink into the ground. The result is visible cracks, punch holes, rutting and other types of failures in the bound pavement surface that affect the integrity of the roads and can cause damages to vehicles and decreased driver's safety.

A solution to this problem is soil confinement with the use of geocells, which allows vertical loads to be transferred horizontally across the reinforced layer. If the geocell has a high enough tensile strength, it can transfer loads across the layer and therefore, diminish the impact of vertical loads into the existing subgrade underneath the pavement structure. This means that the existing poor subgrade will be able to sustain the resulting distributed vertical loads as they would be less than the bearing capacity of the existing soil.



In other words, by transferring loads horizontally, the resulting vertical loads transferred from the surface into the soil layers underneath are diminished by a factor of 40% to 60%, allowing the existing soil to handle them much easier. This is known as subgrade / subbase reinforcement, which increases the overall strength of the pavement structure and reduces the thickness of aggregate material that is generally required to offset the effects of vertical loads in a conventional pavement design. In the case of poor soils of low CBR (less than 3%) the conventional solution can translate into 1 meter or more of excavation and backfill, to replace the poor soil with better material that can handle the applied vertical soils. By introducing soil confinement through geocells, it eliminates the need for deep excavations and subgrade replacing, saving construction time and costs on a project.

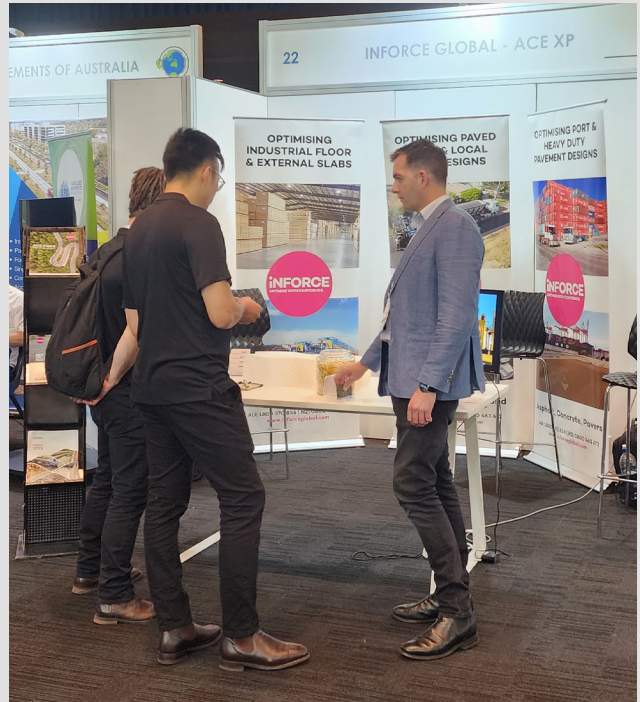


## CONFERENCE REVIEW

**We attended the Australian Flexible Pavement Association's (AfPA) 19th International Flexible Pavements Conference in sunny Brisbane last month. Attracting over 700 delegates from across Australasia as well as Overseas, the Bi-Annual conference is the primary meeting of flexible pavement professionals across the Australasian industry.**

The theme of the conference was 'Safely Paving the way to Carbon Zero' and was a great opportunity to learn from leaders in the industry the multitude of innovative solutions being worked on across State Road & Local Government agencies, Road building & Construction companies as well as Academia. The level of new technology and the effort the industry is putting in to drive down their carbon footprint is truly impressive, especially the level of sophistication required to take theories from a lab and commercialising them for the client.

Inforce was part of the large array of exhibitors from across the industry and it was great meeting a lot of new connections and educating them about the advantages our ACE XP Aramid Fibres. Increasing the tensile strength of Asphalt at the same as modulus resulting in increased fatigue resistance as well as rutting performance



was a new concept and we had plenty of questions. The option to use ACE XP as an alternative to Polymer Binder, especially where there are logistical issues due to storage capabilities or remote locations was an eye opener. Couple this with the reduction in energy required to heat the mix (standard mix temp vs. the higher temps required to mix PMB) you can also see some significant reductions in CO2 outputs, ticking all the boxes.

**Well done AfPA for a superbly run event, we will be back for sure and look forward to the next event in 2025!**



### MEET THE TEAM: JEREMY WILCOX

Based in NSW, Jeremy is spearheading our subbase pavement solutions in Australia, bringing with him significant experience from a tier 1 construction firm and the ability to apply unique solutions to solve client's problems around subbase, longer-lasting infrastructure and real-world environmental sustainability.

**iNFORCE**  
OPTIMISE WITH CONFIDENCE.