

**Annual Report 2019**

Securing tomorrow by  
innovating today



# Kia ora, Welcome!



## Cover:

#SteelisBeautiful - this amazing photo took out our Instagram Stories competition we ran this year to select our annual report cover! Thanks to all of the public that voted.

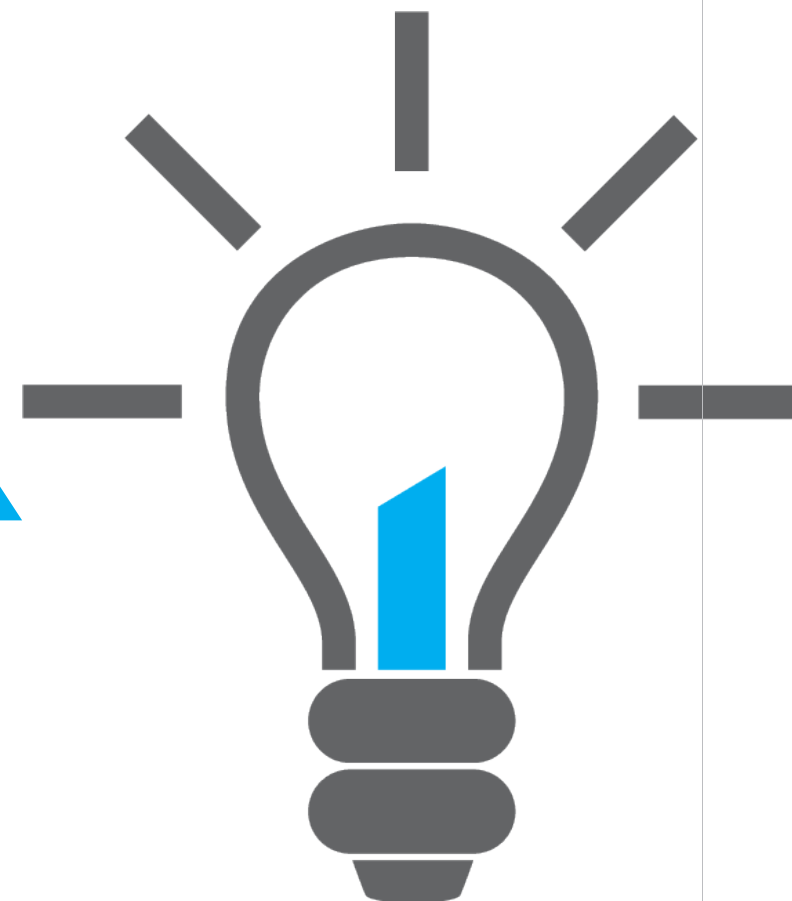
Captured by our CEO Troy Coyle on a visit to our member Grayson Engineerings facilities in Manukau, Auckland - this showcases steel in all it's glory.

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**Longveld** | Our Hamilton based member with a focus on the manufacture of primary food processing machinery, systems, equipment and custom metal fabrication.



Securing tomorrow's industry by innovating today.

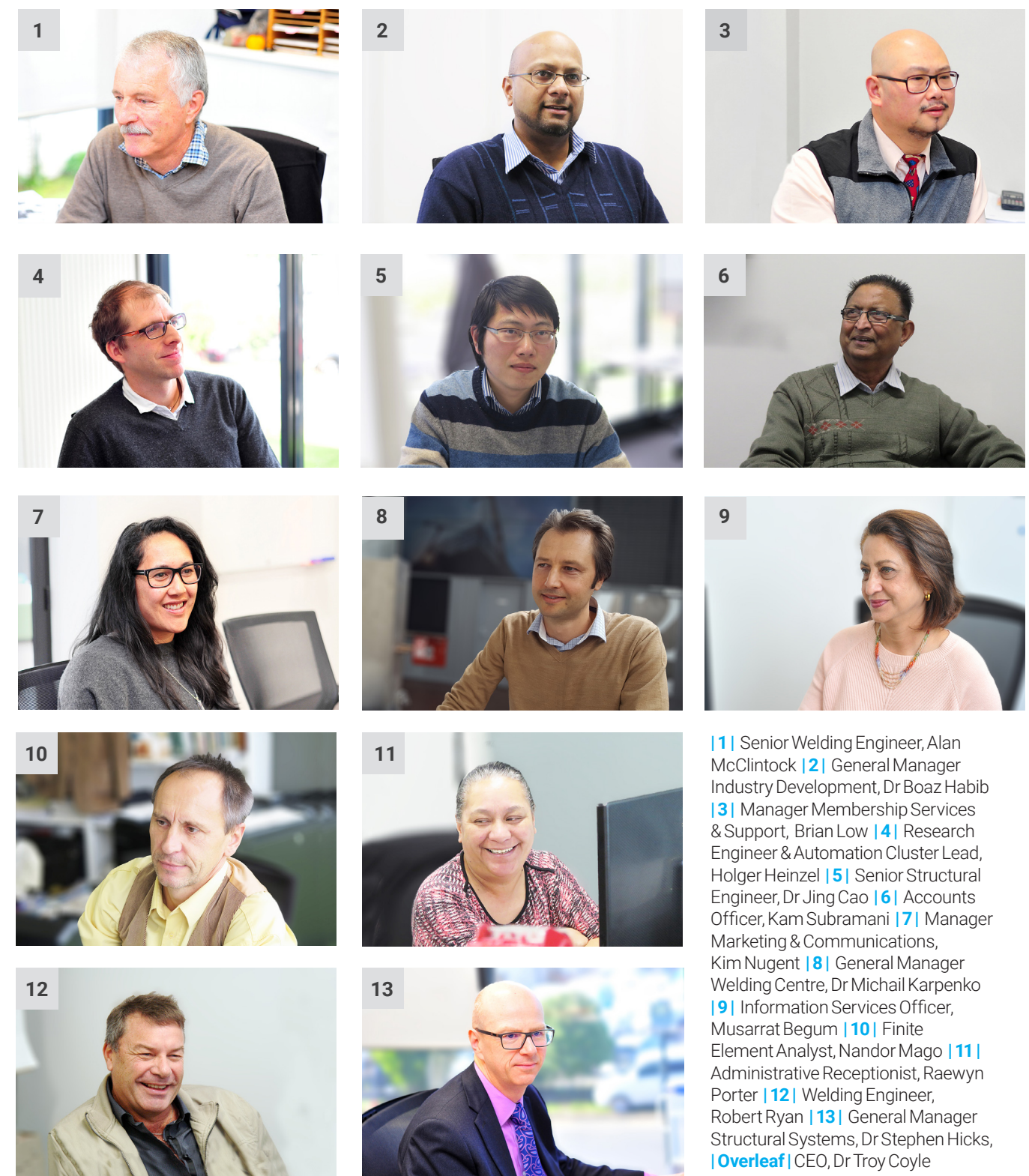
**HERA is building a passionate tribe of metal heads who innovate successfully.**

Our team is focused on making sure our NZ metals industry is looking forward and prepared for the future.

Delivering solutions, developing and maintaining a skilled work force and connecting & inspiring, so our members are supported in technical excellence and knowledge transfer, have the right skills for their needs, and are a community engaged and united.



# Innovation in metals



**| 1 |** Senior Welding Engineer, Alan McClintock **| 2 |** General Manager Industry Development, Dr Boaz Habib **| 3 |** Manager Membership Services & Support, Brian Low **| 4 |** Research Engineer & Automation Cluster Lead, Holger Heinzel **| 5 |** Senior Structural Engineer, Dr Jing Cao **| 6 |** Accounts Officer, Kam Subramani **| 7 |** Manager Marketing & Communications, Kim Nugent **| 8 |** General Manager Welding Centre, Dr Michail Karpenko **| 9 |** Information Services Officer, Musarrat Begum **| 10 |** Finite Element Analyst, Nandor Mago **| 11 |** Administrative Receptionist, Raewyn Porter **| 12 |** Welding Engineer, Robert Ryan **| 13 |** General Manager Structural Systems, Dr Stephen Hicks, **| Overleaf |** CEO, Dr Troy Coyle

**Our people**





Chair | Former GM Page Macrae - Mike Lehan



CEO | Dr Troy Coyle

“We want to build a passionate tribe of metal heads who innovate successfully.”

## Report from our Chair & CEO

### In FYI9 HERA created a new vision, mission and strategy.

**Our vision “securing tomorrow’s industry by innovating today,” supported by our mission to “build a passionate tribe of metal heads who innovate successfully.”**

We also identified our key values and three year roadmaps for each of our divisions. From this, we now have a formula for future proofing the industry:

Delivering solutions + Developing & maintaining a skilled workforce + Connecting and inspiring  
= HERA members who are prepared for the future.

FY19 was again a very strong year for metals based engineering. The HERA Levy income was up from FY18 (mainly due to strong steel volumes and the increased welding consumables levy). Most of our members are reporting strong order books with some at unprecedented volumes. Overall, it was one of the strongest years yet for our sector.

#### Delivering solutions

Our role is to deliver technical excellence and knowledge transfer to our members. In FY19, we delivered a number of key project outcomes in this space:

- welding recommendations were created for alternative steels
- software was developed for composite floor design

- collaboration with the University of Lulea in Sweden to develop post installed shear connectors
- development of the HERA/SCNZ Guide for Sourcing Compliant Steel
- working with MBIE to ensure that AS/NZS 42327 and NZS TS 3404 were cited in B1/UMI of the Building Code
- development of a new shear connector for our member Hilti, as well as new composite floor design software for Dimond
- Our publications covered our brittle fracture work, seismic welding recommendations, and guide on imported steel fabricated overseas for use in NZ

#### Developing and maintaining a skilled workforce

We recognise that there is much more we can be doing to support our membership to become more skilled.

That’s why in FY19 we launched a number of initiatives to prepare members for the future, including productivity and automation assessments. Leading on from these, providing training on Theory of Constraints, using South African expert Arrie van Niekerk. We were pleased to see over 20 of our members attended that training.

Our Research Engineer, Holger Heinzel, also spent two weeks at the University of Wollongong’s Facility for Intelligent Fabrication, learning of best practice automation and productivity to share with industry, and we also hosted a member visit to that Facility too.

Other highlights that our members benefited included:

- 120 members attended the Advanced Design Seminars with Prof Pingsha Dong
- 10 members joined our industry roadmap workshop
- 20 members have signed on for our six month Innovation READY program

- 50 members attended the SFC training course
- And, we also had strong attendance at our regular training programs such as our welding supervisor training and welding inspection course

We also created new innovation clusters which enable us to have more focused interactions with like-minded members. So far identifying several core areas to target such as automation, HR innovation, blockchain and digital content.

#### Developing, meeting and maintaining high industry standards

In FY19, we developed the SFC site erector scheme for HERA Certifications (and SCNZ as the client). As part of this, we conducted 30 maintenance audits plus five new audits for SFC for HERA Certifications.

We also had our International Institute of Welding accreditation audited by IIW and are pleased to report that we passed with flying colours.

#### Financial performance

In FY19, the Minister approved the increase in the Heavy Engineering Research Levy associated with welding consumables from 5c/kg to 10c/kg. This, combined with strong steel volumes meant that we had the strongest year yet for levy income.

Looking forward, we reinforce the same position that we held in the FY18 Annual Report - which is that the construction industry pipeline is still looking strong until 2021.

Many of our members are reporting unprecedented forward order books. However, we do have concerns that there is increasing use of imported pre-fabricated products that the levy doesn’t capture under the current legislation.

We’ve requested that the Minister addresses this to ensure the opportunity to apply levies on imported steelwork is not lost.



Our people

The key staff change for us in FY19 was the retirement of our longest serving employee, Welding and Inspection Engineer, Peter Hayward. Unfortunately, we also lost Peter fairly shortly thereafter and he is very much missed by the team.

We also had our Senior Structural Engineer Jing Cao leave us to move back to Australia - where he continues to work on bridge design and standards.

Excitingly, we had Welding Engineer, Robert Ryan join our Welding Centre team to assist in the delivery of our course and audit deliverables.

CEO Outlook

My first year in this role focused on addressing some of our key risks, developing our policies and procedures, securing our income and improving our communications, R&D processes and health and safety.

We also squeezed in the development of a new vision, mission, strategy, divisional roadmaps and values. Of which, I'm now very much looking forward to implementing that new strategy and delivering focused support for our members.

In FY20, this will include development of our new HERA Innovation Centre, and some exciting new R&D projects focused on Industry 4.0, seismic, innovation in design and design software. It will also include hosting the first of our inaugural three-yearly innovation Future Forum's - 20/20 Vision.

In closing, I'd like to thank all of our members and stakeholders for their support in FY19.

Mike Lehan  
Chairman



Troy Coyle  
CEO



Our Executive Board



1

1 | Deputy Chair Matthew Kidson, Managing Director Kernohan Engineering



2

2 | Craig Stevenson, Technical Director - Built Environment Aurecon



3

3 | Darren O'Riley, Manager SCNZ



4

4 | Dave Anderson, General Manager John Jones Steel



5

5 | David Moore, Managing Director Grayson Engineering Ltd



6

6 | Dieter Adams, Chief Executive NZ Manufacturers & Exporters Association



7

7 | Jennifer Hart, Principal - Transport Infrastructure, Beca Ltd



8

8 | Matthew Black, Head of Product & Innovation NZ Steel



9

9 | HERA Foundation Chairman Noel Davies, Joint Managing Director Hydraulink Fluid Connectors



10

10 | Raed El Sarraf, Technical Principal - Materials & Corrosion WSP Opus



# Success in FY19

Putting innovation and research at the core of what we do.

At HERA, one of our values is integrity.

It asks us to be responsible for our actions and deliver on our promises.

We've spent a lot of time this year reflecting on this. It's led to a solid strategy with value-add outcomes for our members - and most importantly, a roadmap for our team that they buy in to.

The result has been achievements we feel proud to share - because they all go towards our mission to build a tribe of metal heads who innovate successfully!



We announced **Sarah Lewis** as our first Whanake Scholarship recipient.  
#MaoriInEngineering



We approved **11** panel projects endorsed by our research panels.



We became a founding member of the **Diversity Agenda**.

**3**

**Design software** packages developed & 1 launched!  
#StructuralSystems  
#digitaltechnologies



Developed & delivered **welding productivity & automation capability assessments program**.



We launched our online library!  
#digitalresources



We launched our podcast!  
#StirringThePot



Innovation READY had its second cohort & industry roadmapping is delivered.  
#IndustryDevelopment

**44**

New members welcomed to HERA.  
#tribeofmetalheads





**D&H Steel Construction** | CW Beams in the construction of the University of Auckland 507 Park West new facility for the School of Medicine and Population Health.

Across our teams, we know our members are supported.

**Because every day we're delivering technical excellence and knowledge transfer they can find strength in.**

The most significant way that we do that - is through our research programs.

This financial year, we wanted greater engagement and transparency with our industry in selecting our R&D & innovation focuses. Trialing a new approach to cover all three types of innovation:

1. Incremental (mainly development);
2. Adjacent (mix of applied research and development); and
3. Transformational (mainly applied research).

This gave us closer engagement with our members and ensured our panel projects were industry driven and addressed problems that our industry is facing.

How did we do it?

**Step 1** Engaged more with our smaller members by democratising the process

We introduced 'quick wins.' A new initiative for our SMEs of <20 employees who felt under-represented. Projects were scoped based on what we could deliver quickly within our available budget.

**Step 2** Continued to focus on transparency and engagement for core research activities

We still allocated the bulk of our funding to panel-approved projects that maximised research quality and common good industry impact.

**Step 3** Protected the future

We allocated a set budget (approved by the Executive) to transformational R&D. This ensured we had the right mix of solving the 'here-and-now' problems and preparing our industry for the future.

# Delivering solutions



# Panel projects

Across our division we've been working on a number of R&D projects designed to assist our membership.



## Development of steel and concrete composite standards for buildings and bridges

We've been working on a direct text amendment for AS/NZS 2327 which, among other things, will allow composite columns to be designed unprotected in fire conditions for up to 240 minutes.

In cooperation with MBIE and Standards New Zealand withdrawing the conflicting NZS 3404.1:2009, successfully having AS/NZS 2327 and TS 3404 cited in the Building Code, and securing support to revise NZS 3404 - with the possibility of harmonizing it with the Australasian steel structures standard AS 4100.

## Design software and guide for composite columns to AS/NZS 2327

To help our members and industry exploit the benefits of AS/NZS 2327 we worked closely with CTICM in France to develop desktop design software.

Successfully launched in April 2019, the software designs composite columns using concrete filled tubes in alignment with this standard for both normal and fire conditions.

To support specifiers, we've commenced work on a design guide which will be completed once the direct text amendment to AS/NZS 2327 is published.

# Structural Systems

## Design software for composite slabs and beams to AS/NZS 2327

Driven to make steel the material of choice for designers, we've collaborated with SCI in the UK to simplify the design process using web-based design software to design composite slabs and beams according to AS/NZS 2327. In the long term reducing costs and providing increased satisfaction to the Developer or Asset owner.

Including all common deck products available in NZ, it'll have the capability to design composite beams using Hilti X-HVB shear connectors and will be launched once the direct text amendment to AS/NZS 2327 is published.



## Guidance for imported steel fabricated overseas for use in New Zealand

Many countries, including NZ and Australia, are experiencing issues with sub-standard steel and dumped or imported steel. Such imports have a negative impact on locally produced steel and applying measures to ensure that free markets are competing on a level playing field, while product conformance and quality is maintained is key.

That's why, in collaboration with SCNZ, a new guide for evaluating the conformity of steel manufactured to EN and JIS standards is under development. It's expected to be published in 2019/20.





# Panel projects

Our strategic goal is to develop a national fabrication capability - upheld through research.

# Welding Centre

## Seismic research program

We're developing recommendations for specifying weld details for critical seismic connections in New Zealand.

This is to make fabrication more cost effective while ensuring adequate performance of the connection in-service.

So far, seismic tests involving large scale moment resisting connections and a number of small test specimens have been successfully completed.

The test results were evaluated using advanced FEA based computational techniques to establish criteria for the correct sizing of welds subject to seismic loadings.

The research results have been summarised in a number of papers and a HERA Guide on replacing of butt welds by partial penetration welds that will be available in the second half of the year.

## Quality and productivity research program

The quality and productivity research program aims to establish a system for continuous monitoring of quality of fabricated steelwork, optimising inspection requirements and managing compliance risks based on big data analysis.

Our team is collaborating with the University of Wollongong's Facility for Intelligent Fabrication (FIF) to perform welding productivity and automation capability audits, carrying out seven assessments so far.

We've also established an Automation Cluster to address the industry needs in this area. The first activity being a visit to the FIF to get familiar with emerging robotics technologies, augmented reality and industry 4.0.

In cooperation with the University of Auckland, we're also performing a number of sub-projects in the areas of Industry 4.0 concept and in-process quality control using advanced welding power sources and digital twins. The goal being to develop a roadmap for industry.

## Selection of materials to avoid brittle fracture

Brittle fracture is one of the essential design considerations to ensure adequate performance of steel structures under static and seismic load.

The aim of this project is to revise a brittle fracture provision of New Zealand standard NZS 3404.1, NDT requirements and weld acceptance criteria of AS/NZS 1554 to align them with advanced material selection methodologies such as the procedure of EN 1993-1-10.

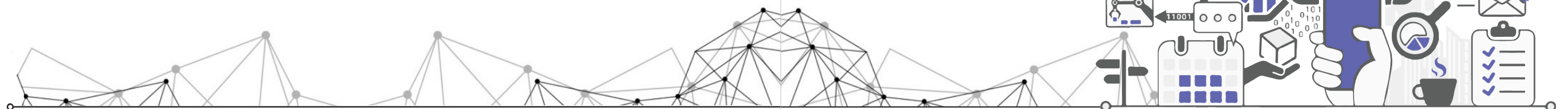
So far, the work covering selection of Australian and New Zealand steels has been completed and results published. The requirements for the selection of the steel fabricated to other standards such as EN, JIS and API standards for the use in steel structures have also been established.

Overarchingly, the project outcomes will facilitate the use of steel in structural applications as the material of choice.

## New projects

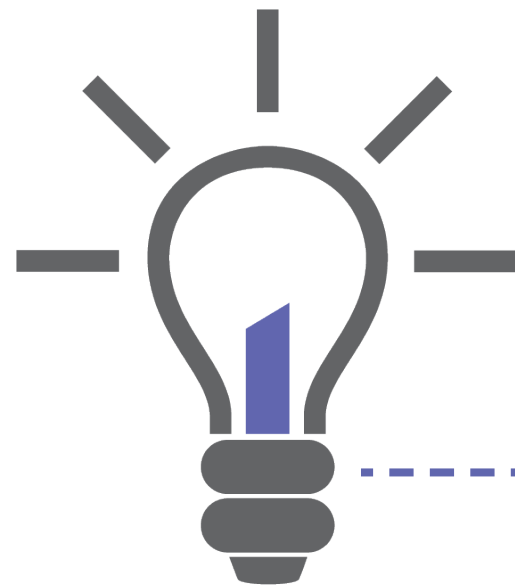
A number of new projects and research programs have been developed to assist industry in the areas of design, advanced materials, fabrication and compliance.

These include the seismic research program, industry participation program – advanced design of welded joints, performance of coastal weathering steels in New Zealand coastal environment, national register of certified welders, and welding capability review program for SMEs.



# Innovation

We've forged an entirely new pathway for our industry - and it's one that is looking ten years ahead.



## Innovating our way into the future

We've created a new industry development roadmap (HERA report R5-87-2019) which aligns with our newly introduced strategy to deliver solutions, develop skills, & inspire and connect - to future proof our industry.

Besides driving the creation of new technology networks and exploration of what technologies will have an impact on the NZ metals industry - it has identified the need to pursue industry opportunities only when we have industry engagement.

It is our hope to launch government co-funded industry R&D programs with a strong focus on these future technologies and their integration into our industry.

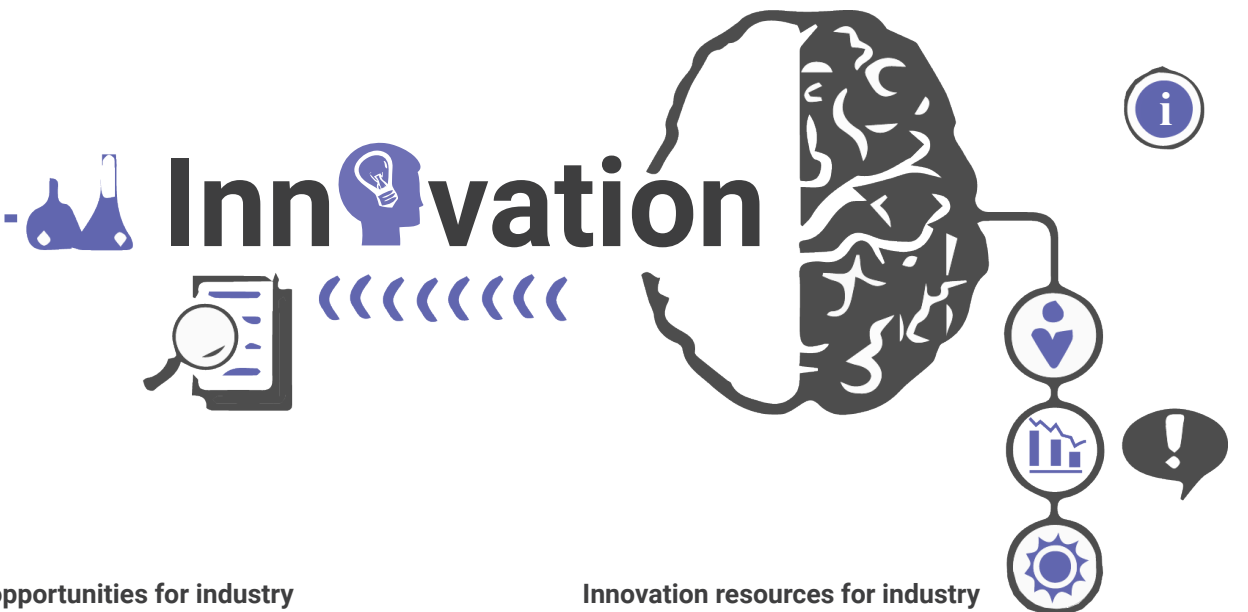
## Researching new technologies

We will focus on new technologies for our industry including blockchain, IoT, automation, prefabrication, virtual reality, augmented reality, artificial intelligence, big data and smart materials.

We're also developing pathways for our members to integrate technologies in this space through industry awareness communications and strategies.

These new technological fronts have led us to investigate opportunities to improve contract regulations, quality control and chain of custody with blockchain and the impact of automation on our jobs and their transition in the near future.

# Industry Development



## Business opportunities for industry

This year we had 20 tariff concessions applied to us for imported items. Of these, only two were objected to.

Encouragingly, we're beginning to see some of our members take active interest in tariff concerns - especially in the marine industry.

We certainly encourage our members to do so as it represents opportunity for manufacturing and could be the birthplace for future innovations.

## Innovation resources for industry

We know the best way to foster the adoption of unknown concepts within a business is by sharing examples of how it has been successful with others.

That's why we've started preparing an industry innovation handbook which contains practical case studies of innovation in our industry.

This will provide links to how structured innovation processes are valuable, and will compliment an online innovation portal development which is also underway.



## There is more to wellbeing than just a healthy economy.

The Living Standards Framework - or LSF for short, is a newly developed and broader way of looking at things and was used to develop Government's five Wellbeing budget priorities.

In September 2018, we released a report to our members on the economic contribution of the metals industry to the NZ economy.

In doing so, we were proud to be the first industry to assess itself using Treasury's new Living Standards framework.

### The NZ Metals Industry is a strong contributor to the wellbeing of our nation

In terms of the conventional economic metrics, the manufacturing component of the industry alone currently provides almost 30,000 full-time equivalent (FTE) jobs and generates around \$3.3 billion in gross domestic product (GDP) each year.

The BERL report also showed that our industry's contribution to wellbeing in New Zealand is considerably greater than the conventional metrics reveal. By describing and illustrating how the industry helps to develop and sustain each of the four capitals in the LSF, it demonstrates that we promote wellbeing in a much broader sense.

This is primarily through the supply of vital goods and services used in investments in transport infrastructure, construction and building. Beyond their volume or value, our industry adds to the quality of the investments by increasing the resilience of the built environment and by enhancing the performance of structures and buildings.

We help to safeguard natural capital by working to reduce raw material inputs and harmful emissions, promoting and adhering to environmental standards, and conserving air and water quality. Perhaps most

conspicuously, the industry safeguards natural capital because the principal metals it produces and uses can be recycled over and over again, without degradation.

We also make a diverse contribution to human capital. Beyond providing tens of thousands of livelihoods, we contribute to the development of skills and knowledge in the workforce through the provision of traineeships and apprenticeships. As well as ongoing training and development for employees throughout their careers.

Social capital has a range of different aspects, but doesn't have a precise definition. However, our contribution in terms of several of the aspects can be illustrated. In particular, we're making significant philanthropic contributions. We are also supporting our local communities in other ways, such as sports sponsorship. In addition, we promote trust within the industry, our customers and the general public, through the development and implementation of standards.

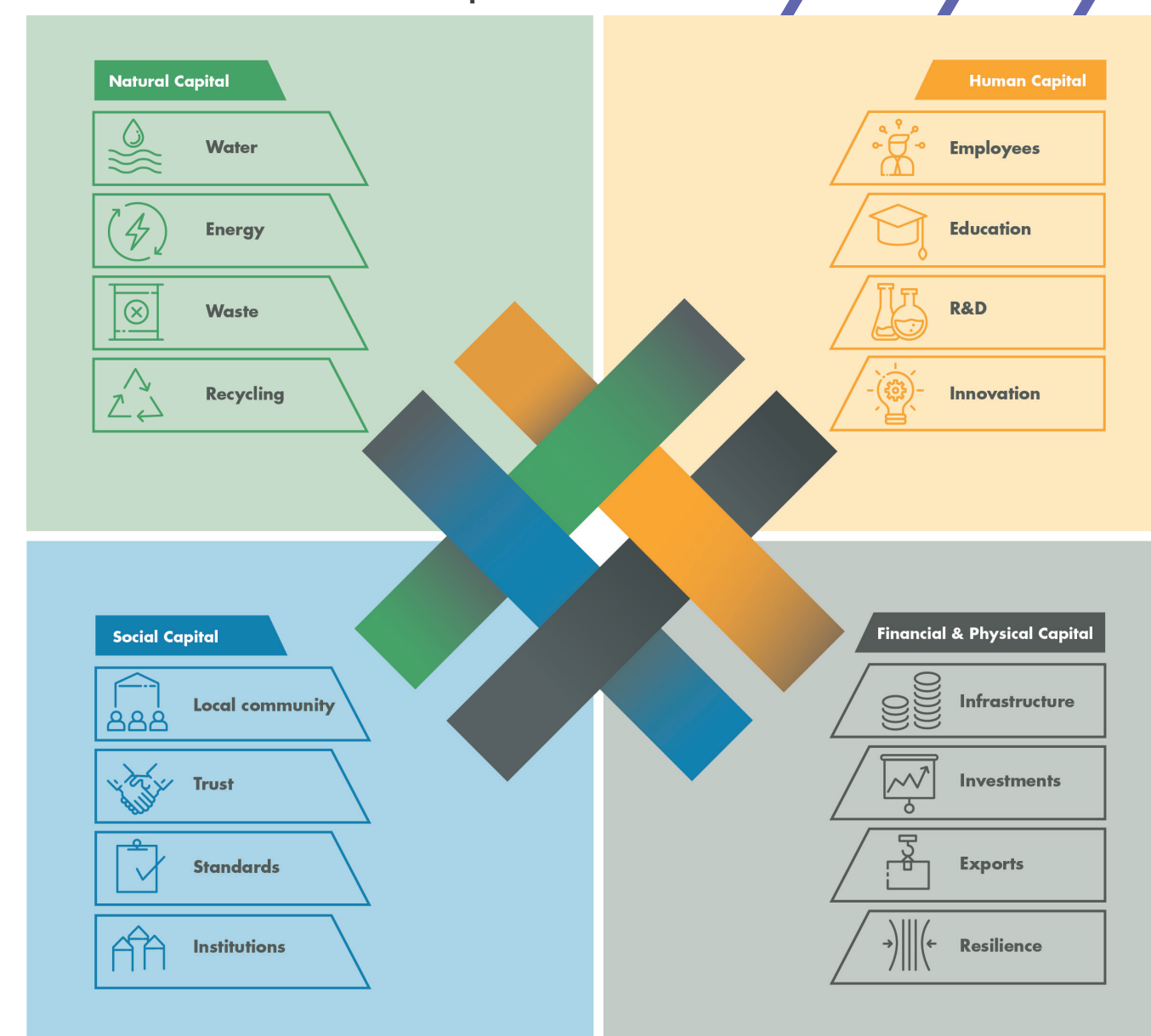
### Sustainability credentials

We're also pleased to report, that we've been instrumental in re-establishing the Sustainable Steel Council (SSC) in 2018. Since then, supporting SSC to undertake a rebrand, materiality assessment and risk analysis to better position itself to assist industry. We've also produced the Steel in the Circular Economy report for them, as part of our commitment in this space.

Our GM Structural Systems Stephen Hicks also did considerable work with Life Cycle Association New Zealand (LCANZ) and as Director on EPD Australasia. During this period seeing our members Pacific Steel publish their EPD on SEISMIC® Steel Reinforcing Bar, Coil, Rod and Wire, and New Zealand Steel with their EPD on COLORSTEEL® ENDURA® and COLORSTEEL® MAXX®.

# Establishing a living standards framework

## Metals contribution to the four capitals





## Supporting our metals engineering sector to thrive in local & offshore markets.

### Case study: Uptake of cold formed steel

A large proportion of the past year was spent on R&D activities to support the Futura pre-engineered steel building system - tailor made products used as girts, lintels and rafters in CFS framed structures.

We identified the section properties and derived the signature curves to identify critical local, distortional and global buckling stresses and buckling modes. This was for pure major axis bending and axial compression - the key design parameters for structural engineers using the Direct Strength Method (DSM) according to AS/NZS 4600:2018.

#### The result?

A client with confidence in their product, armed with strong data of DSM based design span tables governed by bending capacity under critical wind action specified in AS/NZS 1170.2, and a third-party Chartered Engineer independent peer review.

### Case study: Design rules for Hilti X-HVB

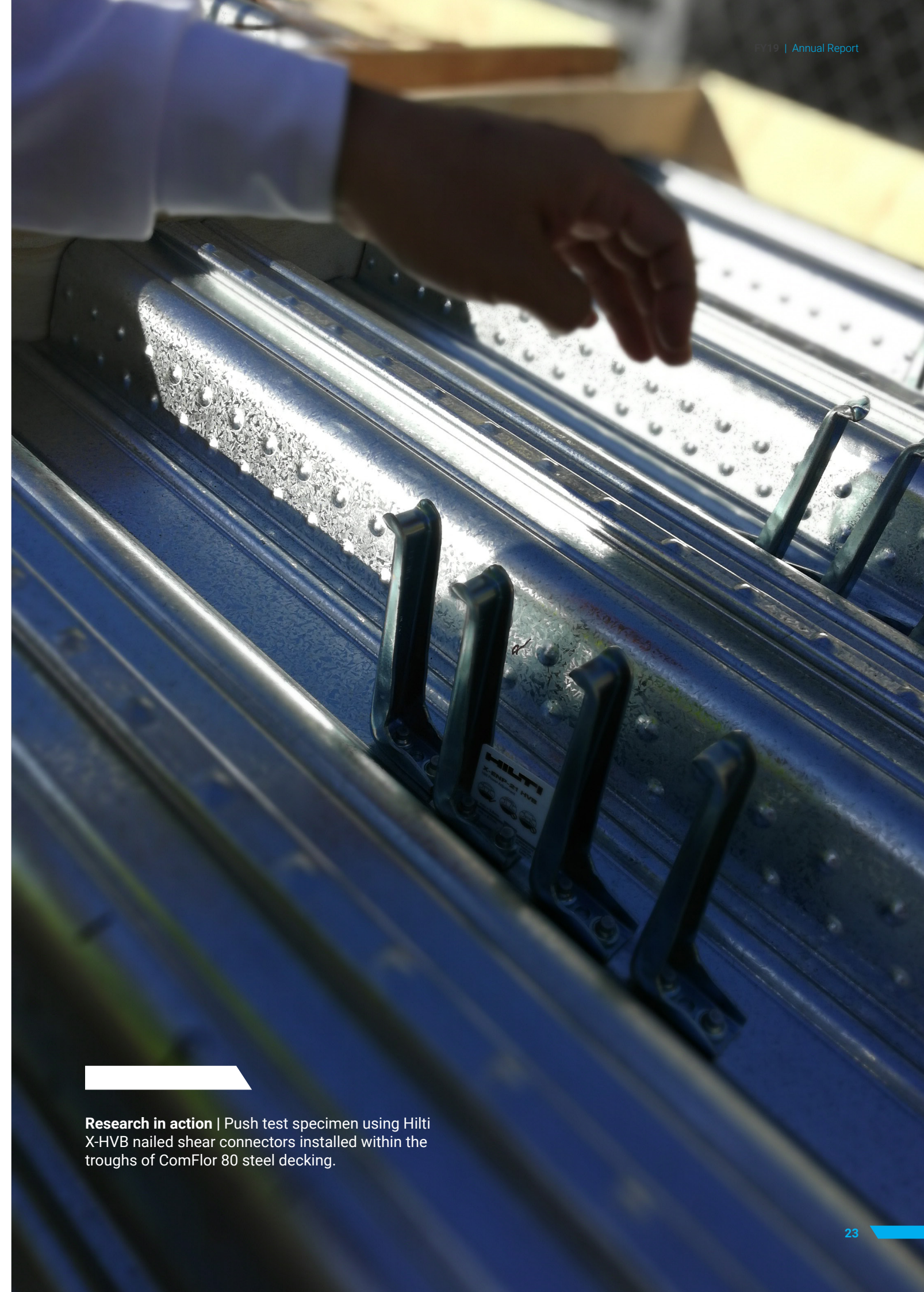
The Hilti X-HVB nailed shear connector has been widely used in composite construction within Europe since the early 1980's. Their advantage over traditional headed stud connectors being they can be installed on galvanised beams, or top painted flanges for durability. They're also a project solution when the provision of power for stud welding is a problem.

However, they're difficult to use in NZ as generic design rules aren't currently given in the European composite standard Eurocode 4, and proprietary design information is presented within a European Technical Approval (ETA).

#### The result?

Under HERA Verified we confirmed the ETA design rules can be safely used with AS/NZS 2327 - permitting NZ specifiers to take advantage of this technology. In collaboration with the University of Auckland, we've also been able to extend the ETA to enable these shear connectors to be used in ComFlor 80 decking.

# Product development and verification.



**Research in action** | Push test specimen using Hilti X-HVB nailed shear connectors installed within the troughs of ComFlor 80 steel decking.



Quality

# A national fabrication framework for members

Our strategy is to establish and sustain an optimal steel fabrication capability for New Zealand.

Free welding technical advice

We've addressed over 1100 technical inquiries from HERA member companies throughout this year.

Covering technical questions on:

- interpretation or application of standards,
- technical enquiries requiring in depth technical knowledge and judgement, and
- technology assistance and implementation of quality systems via HERA Certification.

Our technical team provided assistance covering

a variety of technical topics including weldability issues, brittle fracture, design of welded joints, quality management, welding procedures, welder's qualification, compliance issues and more.

We also developed and delivered assistance services to five SME members to help them to establish quality systems in compliance with AS/NZS 5131 CC2.

Strategic alignment

Each pillar below represents tactics our Welding Centre is taking to achieve a fabrication capability in Aotearoa in alignment with our overarching strategy.

1

Ensure optimal technology transfer to meet industry's needs.

2

Ensure optimal R&D outputs to meet industry's needs.

3

Develop certification schemes & services to meet industry needs.

4

Establish ANZ framework for Personnel Qualifications.

# Developing, meeting and maintaining high industry standards

Through our two technical teams, we're committed to driving standards and compliance works.

With both our Welding Centre and Structural Systems divisions representing us on a number of standards committees.

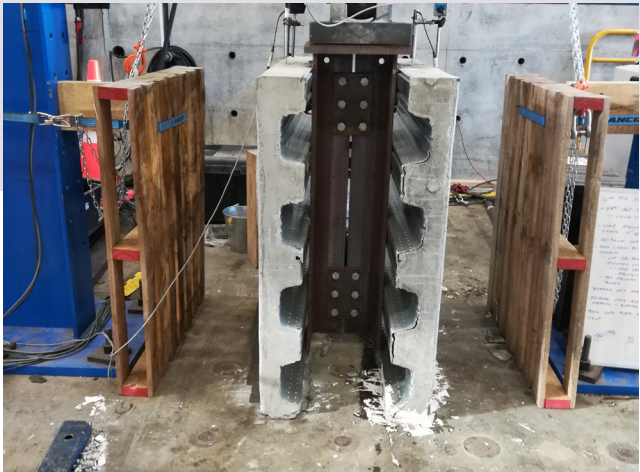
This includes WD-002, WD-003, ME-001, MT014 and ISO/TC167. As well as close works with SCNZ, MBIE, NZ Standards and more.

We've had great success in this realm, with the following standards being revised through our staff contributions: AS/NZS 2980, AS/NZS 5131, and AS/NZS ISO 17637.

We've also been instrumental in the removal of conflict between AS/NZS 5131 and NZS 3404.1 - providing clear understanding of which version should be used for regulatory compliance.

And, the development of the new composite design standard AS/NZS 2327 and durability technical specification NZS TS 3404. Successfully having them also referenced in B1/VM1 and B2/AS1 Amendment 10 of the New Zealand Building Code.

For our industry this means they have access to a wider range of composite structure design provisions, and provides a pathway for designers to specify corrosion protection systems while avoiding the need to justify alternative solutions.



Research in action | Push test at the University of Auckland using Hilti X-HVB nailed shear connectors and ComFlor 80 steel decking.





**Manager** | HERA Certifications & HERA ANBCC

## Report from our HERA Certifications Manager

**HERA certification is an impartial partner supporting industry.**

**As the International Institute of Welding (IIW) Authorised Nominated Body for Companies Certification (ANBCC) for New Zealand to IIW MCS ISO 3834, we're able to provide New Zealand fabricators with a world class certification system.**

HERA Certifications Ltd was audited by the IIW auditors in December 2018. The Audit confirmed compliance of our system and processes with the requirements of the IIW.

All activities of HERA Certifications Ltd are controlled by an independent Governing Board, including representation from our nations fabrication industry and other interested parties.

Certification services are delivered by experienced HERA auditors and technical experts contracted to HERA Certifications Ltd.

The Fabricator's Certification Scheme has now been fully aligned with the fabrication requirements of the standard AS/NZS 5131:2016 Structural steelwork—Fabrication and erection. It is a vital standard for the structural steel industry that has been cited on the Building Code.

ISO 3834 is a key part of the Steel Fabricator Certification Scheme (SFC), reflecting the significance of the quality of welded connections for the safety and reliability of structures subject to high seismic

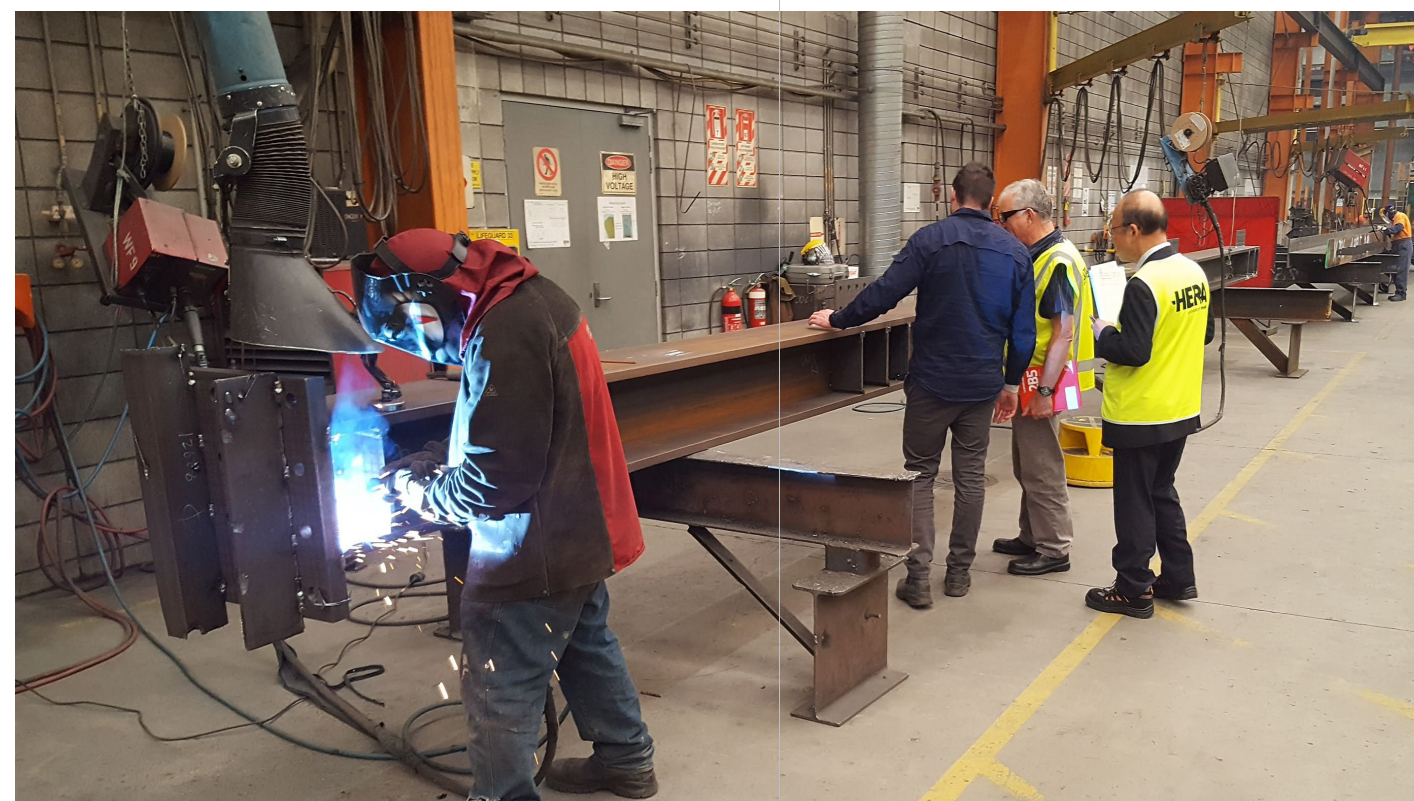
demand.

Over five years of operation, we're pleased to share we've successfully been able to certify companies so they have the appropriate personnel and quality management systems in place. This financial year, four new companies have been certified to the requirements of SFC CC3 including IIW MCS ISO 3834 and 28 surveillance audits conducted.

A further milestone has been the development and introduction of the Site Erector Scheme. This scheme is now available to certified steel fabricators.

**Michail Karpenko**  
Manager

“ This financial year, four new companies have been certified to the requirements of SFC CC3 including IIW MCS ISO 3834 and 28 surveillance audits conducted.



**IIW Audit 2018** | HERA Certifications Ltd was audited by the IIW in December 2018. Confirming compliance of our system and processes with the requirements of the IIW.





**#steelisbeautiful** - it's the safest building material choice for NZ's seismic environment, is surprisingly cost competitive over it's life span, is more environmentally sustainable than most people realise and is easy and versatile to work with!

# A skilled workforce

We're quenching the skills need of our industry.

**By making sure that our members have the right competencies for their needs.**

At HERA we're trusted for our technical expertise - and we use it to run courses, seminars and workshops that make a difference to our members.

**190+**  professionals attended our technology forums

**66**  professionals completed our welding supervisor and inspector courses

**AND 46**  qualification diplomas were issued by us as the IIW Authorised Body for NZ



# Training

**FY19 was a busy year for us in the education and training space - especially for our Welding Centre!**

**We provided opportunities for industry to upskill on both the technical and soft skill front with leading experts in their field.**

## Welding Supervisor and Inspector

We continue to provide training for those who have responsibility for the supervision and inspection of welded fabrication, and the qualification of welding procedures and welders.

It's a popular course offered biannually in both Auckland and Christchurch, and is ideally suited to staff already working in industry seeking on-going professional development to increase their value.

This year we were proud to have 56 professionals complete our Welding Supervisor course, and for 10 to go on to become Welding Inspector qualified.

## Qualifications and examination

Our Qualification diplomas are issued by HERA ANB, the International Institute of Welding (IIW) Authorised National Body for New Zealand.

Our training facilities were audited by two IIW assessors in December 2018 - Mr Henk Bodt from Netherlands and Mr Shoichi Nomura of Japan.

The audit confirmed adherence to the high level of compliance with the requirements of the scheme - delivering the highest standard of training and certification to our NZ metals industry.

## Advanced weld design seminars

In July 2018, we hosted a series of seminars on Design for Joint Strength, Fatigue, and Fracture Resistances in Welded Connection across Aotearoa. Presented in collaboration with International Expert - Professor Pingsha Dong from the University of Michigan.

With over 120 professionals attending, the seminars focused on fatigue (both high-cycle and low-cycle fatigue) evaluation procedures, fitness-for-service based quantitative weld defect acceptance criteria, fracture control and fillet weld sizing criteria.

Attendees gained the knowledge to make appropriate interpretations of existing design and analysis methods included in various codes and standards and were exposed to cutting edge design procedures.

## Theory of Constraints (TOC) training

A two-day training course on Theory of Constraints (TOC) was presented by Arrie van Niekerk - a leading specialist facilitator in both Auckland and Christchurch in June 2019.

A methodology for identifying the most important constraints standing in the way of achieving a goal to systematically improve that constraint until it's no longer a limiting factor. We had 20 individuals from our memberships and staff attend.

## SFC workshops for the beginners

In response to the growing need for support to achieve Steel Fabrication Certification (SFC) status within companies, we delivered one day workshops on the implementation of AS/NZS 5131 under this scheme.

Presented in collaboration with SCNZ during February and March 2019 - the aim was to train SME fabricators on implementing this standard and underlying quality management systems. Successfully bringing 50 professionals through this training.

# A mechanism for ongoing professional development



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**HERA Training | 1** | AS 2214 course with our Senior Welding Engineer Alan McClintock | **2** | Advanced Welded Connection expert Prof. Pingsha Dong | **3 & 4** | Theory of Constraints expert Arrie van Niekerk presenting, and during a workshop visit | **5** | SFC Beginners course with our Welding Engineer Robert Ryan.

Our Welding Centre connects industry to world renowned experts



# Preparing and training our metal heads for the future

A fundamental part of making sure our industry is around for years to come - is fostering the innovation mindset.

**That's why we've been committed to introducing our innovation training program to our membership.**

Last year we graduated 18 participants from 11 different firms through Innovation READY, and this year another 11 from six companies.

These first two cohorts are very much our early adopters so the ongoing focus is building engagement so it is a mainstream movement for the rest of our members. It's a challenge - we realise we're tackling something that isn't a top priority for our industry yet.

So far, feedback has been positive and we're excited to share that nearly half of the firms from last year have advanced to the Innovation SET & GO part of our program as part of their innovation journey.

**“Innovation READY gives a consistent and structured innovation process to avoid disruption and maximise chances of continued success in future markets.**

**Page Macrae Engineering**



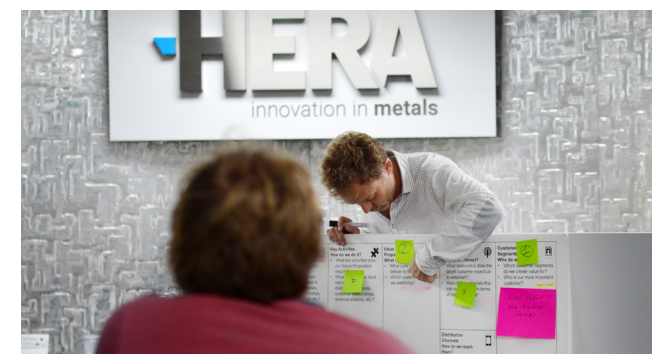
## Customised support in competency development - Innovation SET & GO.

We're proud to have our first forward thinking members progress on to the next stage of our innovation leadership program journey - NDA Group, Kernohan Engineering, Page & Macrae Engineering and EHL Group.

This is part of a two-year research program ending December 2019 with the University of Auckland Business School. It aims to help these companies develop their innovation competencies through a series of interactive engagements. And, more broadly - study our industry's demonstrated uptake of innovation and the barriers stopping them.

So far, participating companies have met with an advisory panel of commercialisation experts - likened to a 'dragon's den' type scenario. This helped them address a number of commercialisation concerns such as IP protection and customer discovery - receiving support from professional students at the University of Auckland School of Commercialisation and Entrepreneurship.

By the end of this process, they will have the knowledge, tools and experience to apply innovation practices and implement their innovations strategies.



Innovation READY FY19 cohort

## Education



## Industry roadmapping our industry collaboratively & strategically.

We've created a new industry development roadmap (HERA report R5-87-2019) that aligns with our newly introduced strategy to deliver solutions, develop skills, and inspire & connect - to future proof our industry.

In April this year, we hosted a workshop where for the first time we invited industry feedback on the future of our industry. The participants were led through an industry roadmapping process by Dr Elisabeth Krull from the University of Auckland Business School.

The outcome was a plan outlined for our industry for the next ten years. Our next steps will be to align this with our industry roadmap to open further conversations with members on next steps.



**“HERA's program has fundamentally changed the way we think about innovation.**

**NDA Group**





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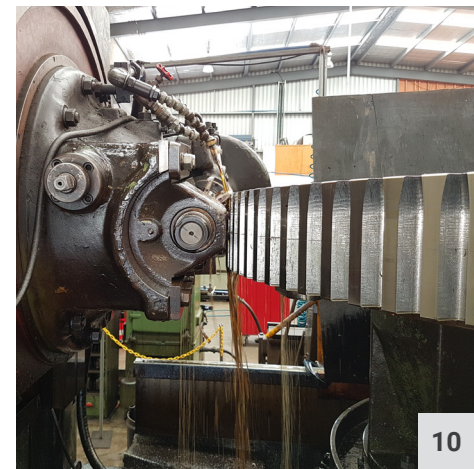


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| 1 | **ABB** - Production Engineer Iain Emerson | 2 | **Dixon Engineering** - base pipe for Tru-Test farm tanks | 3 | **McConnell Dowell** - Kawerau Falls Bridge project in Queenstown | 4 | **MJH Engineering** - 20 Customhouse Quay in Wellington | 5 | **MiTek** - our welding team visiting their premise | 6 | **John Jones Steel** - construction in the heart of Christchurch | 7 | **Callaghan Innovation** - a visit to their AddLab for additive manufacturing | 8 | **CALD** - a bespoke & innovative solution for their cement client, fondly referred to as 'the clam shells.' | 9 | **D&H Steel Construction** - construction in the heart of New Market | 10 | **BoP Gear Cutters** - machinery in action on the workshop floor | 11 | **MB Century** - hei tiki! | 12 | **EHL Group** - Azura 20kW wave energy device deployed at the US Navy's wave energy test site in Hawaii | 13 | **NDA Group** - large scale tank fabrication | 14 | **Holmes Consulting** - tin can construction models | 15 | **Aspire 2 Trades** - workshop visit by our Welding, Engineer Robert Ryan | 16 | **Advanced Boiler Services** - site visit by our GM Industry Development, Boaz Habib.



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| 1 | **University of Auckland** - seismic research testing headed by our PhD Scholarship Recipient, Hafez Taheri  
 | 2 | **Eastbridge** - yard tour by our GM Welding Centre, Michail Karpenko | 3 | **Safe Engineering** - on site machinery in action | 4 | **TiDA** - a visit to their lab facilities to explore titanium powder technology and powder metallurgy.



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| 5 | **NZSSDA** - Katherine Mansfield stainless steel sculpture about to travel abroad through the International Stainless Steel Forum (ISSF) in Belgium | 6 | **Plumb Engineering** - a visit to their Wellington office by our CEO, Troy Coyle | 7 | **Real Steel** - plasma plate cutter in action | 8 | **Ullrich Aluminium** - Ernest E Ullrich National Sales Centre recently opened in Hamilton | 9 | **University of Canterbury** - Associate Professor, Tim Sullivan and PhD Students, Jian Cui and Saul Vasquez doing research on BRB's in Christchurch



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## We want our NZ metals industry to be recognised as employers of choice.

### Why? Because not a day goes by that we don't hear about the skills gap crisis affecting our industry.

It's become clear, that if we want to foster long term sustainability - we have to become an industry that our existing workforce doesn't want to leave, and that our future workforce is actively seeking to be a part of!

To do this, we're building a tribe of metal heads who innovate successfully. Challenging thinking, inspiring innovation and informing our industry on the bigger picture - so together we can make positive changes.

It's led us on a journey to explore what we can do as an industry to attract and retain top talent. Driving thought leadership in human resource innovation, and proactively taking steps to foster:

- diversity in the workplace,
- inter-cultural training,
- a greater focus on work health and wellbeing,
- resilience & empathy, and
- a stronger employee value proposition with clear values.

We know that our industry is a major contributor to the wellbeing of New Zealand's economy.

And, we're committed to telling that story better so we can earn the trust of Kiwi's and demonstrate the major role we have to play in making a better New Zealand.

# Connecting & inspiring



**Baker Cranes** | The install of four off cranes weighing 5 tonne, with a 36m span single girder overhead for Fairview System Ltd located in Mount Wellington, Auckland.



# Innovation clusters

A construction industry survey in 2018 showed:

49%

of large businesses of over 50 employees are committing resources to investigating machine control and guidance/grade control,

25%

to Building Information Modelling and,

21%

to predictive analytics.

We're getting our members thinking.

**Developing 'innovation cluster' groups around future trends likely to disrupt us, and developing better support in preparing for this transition process.**

To do this, a significant member engagement drive was undertaken in FY19 (particularly with our Auckland members).

It not only strongly informed our new strategy, but gave us vital feedback on the challenges our members are facing in the uptake of innovation, and what future disruptions are concerning industry the most.

From here, our lead team investigated these future trends and business opportunities - building roadmaps around these ideas, so that when they get here, we've got a game plan to address them!

There are five key technology areas which have attracted a good number of members in each of them - including pre-fabrication (12), IoT (11), smarter materials (10), Automation (19), Blockchain (11), and HR innovation (7).

Other areas we hope to explore include virtual reality, augmented reality, artificial intelligence, big data, defence industry opportunities, and smart materials.

And, we're proud to report that in FY19 we successfully kick started the following innovation cluster interest groups in response to this work:

## Automation innovation cluster

Exploring the future of automation is very much on the minds of our industry. That's why we spearheaded a trip to University of Wollongong's (UOW) Facility for Intelligent Fabrication (FIF) in Australia with five of our member companies.

Here they experienced first hand advances being made in several areas such as robotics, augmented reality, scanners and dust suppression technology.

This was a real eye opener for those involved and compliments our welding automation and productivity assessments being done to help identify fabricators and/or fabrication processes within operations that can be automated to improve efficiencies, achieve cost savings and avoid time delays.

In terms of our research, we've already got a project running on data collection and analysis (a Welding 4.0 project) and have had our Welding Engineer and Automation Cluster lead Holger Heinzl spend time at the FIF to expand our inhouse capability in automation and robotics.

## Defence innovation cluster

In cooperation with NZDIA and DMTC we've developed a "Defence Ready" program to establish welding fabrication capabilities critical to achieving the industry base so our members can participate in the Australian Defence Project.

Australia is making a massive \$200 billion dollar investment in defence capability over the next decade, which represents a significant business opportunity

for our industry to seize.

So far, we've facilitated a presentation by Mark Hodge DMTC CEO, Michael Mclean from the Sydney Business School and Prof Stephen van Duin, Maritime Platforms Program Leader DMTC to interested parties to highlight the range of opportunities for New Zealand contractors, participation rules and compliance requirements. *[images below from visit]*

## HR innovation cluster

Our member survey revealed the important need across industry to find and retain talent.

To address this, we've launched a new program focused on HR innovation for our industry and efforts are underway to deliver a workshop or seminar to those participants interested to address the skills gap.

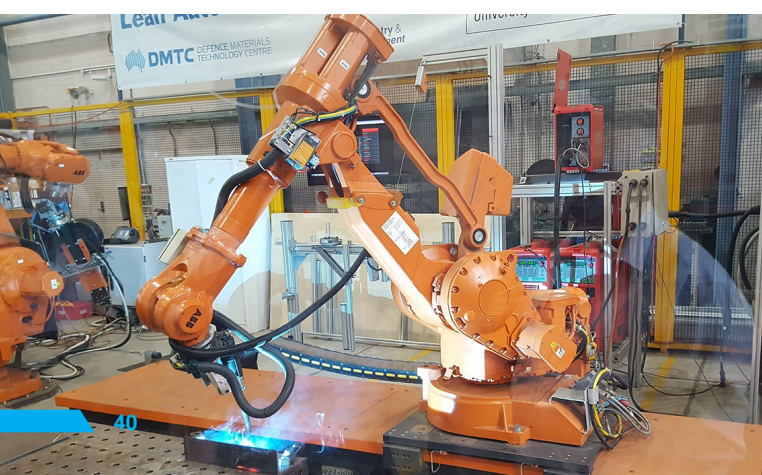
## Digital content cluster

A recent piece of research done by our CEO showed that of the 1200+ individuals on our member database - 40% aren't active on LinkedIn.

This hurts us from two perspectives. Firstly because it means we have very limited ways to communicate key industry content to our members, and secondly - it means they're not communicating externally to NZ society about their value proposition as effectively as they could.

That's why works have begun to connect with those charged with marketing and communications within member organisations. This is a crucial step to align industry to key messages and collectively share them, as well as better share our heart story.

Future technology on the rise...





# The future should be diverse

## At HERA we're seekers of diverse perspectives.

### That's why taking steps to ensure our industry is made of up of people representing diverse backgrounds is so important.

There is compelling evidence of the importance of diversity – particularly in governance and leadership. But we won't get diversity at these levels if we don't get diversity amongst those coming through at the starting levels.

That's why we've been looking at issues like retention and promotion of women, modern work culture that benefits everyone, understanding the contributions of both young and old, embracing differing religious, cultural and sexual orientations, meaningfully connecting with Maori, and more.

We see this as a key deliverable towards supporting our hopes to position our industry as an attractive industry to work in - and with.

### Embracing the young

This year, we sponsored the University of Auckland's Mechanical Engineering Final Year Projects awarding the 'Best in Metals' Award to future engineers - students Nancy Zhou and Mildred Wong. *[image below]*

Living in a digital world their fresh take on our industry was inspiring with their project centered around developing an immersive Virtual Reality (VR) system to visualise "design margins" in a mechanical design.

We're also excited to announce that we've developed a new student membership category. Giving students a window into our industry, access to mentoring, and opportunities for career development. All the while, answering the needs of our industry to connect with our next generation of engineers. It's a win-win.

And of course, we continue to support student interns and PhD scholarship students for projects that will make an impactful difference to our members and the work they deliver.

Seeing Audsley Jones finish her research on earthquake resilience of steel structures, and ongoing support being given to Hafez Taheri for his research on deficiencies in welded connection - particularly in low fatigue regions.

In FY19 we had German Intern Jurgen Inkoferer assist our works to investigate the quality of structural steel fabrication, and improve our administrative process for our welding personnel qualification schemes. As well as Quynh Anh Vũ, who worked on updating our digital library offerings and streamlining our database.



### Celebrating the young at heart!

More and more we've been thinking about the alumni that make up our industry. Their story of innovation in the early years of our industry are remarkable - yet, are under threat of being lost.

It's why we've kick started a history project to capture their story and share the great richness they brought to establishing the very successful industry that we have now.

This comes following the very sad loss of our own, Welding and Inspection Engineer - Peter Hayward.

Although retired, he was still a key part of our HERA fabric - and had been our longest serving employee.

He was a multi-talented inspection wonder. His expertise spanned ultrasonic, penetrant, magnetic, radiographic and visual inspection. Gaining the highest level of certification in each discipline, he was without peer in New Zealand and was instrumental in training generations of inspectors and building our industry in New Zealand.

His retirement left a huge void, and his passing an even greater one. *[image below]*



### Meaningful relationships with Māori

This year we announced the creation of Whanake – a HERA scholarship, in collaboration with the Māori Education Trust.

It aligns with our core target to extend our industry's capacity by creating a more diverse and attractive industry to work within.

To further our aim to strengthen and extend our industry's capacity, this scholarship is targeted to a female Māori student in their first year of a four-year Bachelor of Engineering degree (B.E., or B.Eng). The scholarship comprises of an annual scholarship award of \$5,000 and a paid summer internship (with HERA) over four years.

Whanake is a te reo Māori verb meaning to move onwards or upwards; grow, rise up, and develop. We think it's meaning is apt – and we see this growth and development going both ways. We'll benefit from co-operating with the student in practical ways, and the student receives a yearly internship opportunity in return.

Sarah Lewis is our inaugural recipient for Whanake - and is studying a Bachelor of Engineering, majoring in mechatronics at Massey University in Palmerston North.

She is also a graduate of the Pūhoro STEM Academy, and we're excited to be able to work with Pūhoro and Sarah further to develop a more meaningful Māori in Engineering engagement program.





# 20% more women in engineering by 2021

This year we were proud to become a founding member of the Diversity Agenda.

It's part of our commitment to challenge the status quo in engineering, and address the real issues holding people back.

At the Agenda's core is a clear target: 20% more women in engineering roles by 2021.

It's something our team has been supporting for the past three years - by showcasing our women in engineering. This year being no different as we celebrated International Women in Engineering Day on 23 June 2019 with some amazing wahine toa!

To amplify this stance, our CEO, Troy Coyle and Manager Marketing and Communications, Kim Nugent presented at the Women in Engineering conference in Auckland.

Troy also featured on many panels throughout the year including the MADE conference Diversity Panel and the British Embassy's "achieving equilibrium: a conversation about gender balance in STEM sectors" Auckland panel. She also participated in the Women in Infrastructure group's discussion panel at the Females First Breakfast.

"When I meet new customers, I still get asked if I have an engineering degree and what my qualifications are.

This stereotype is slowly changing, but it takes time to build rapport and respect."

JOANNA WILCE  
REGIONAL MANAGER &  
ENGINEER SURVEYOR  
SGS

#INWED19  
#TRANSFORMTHEFUTURE



"A key challenge women face in engineering is the outside perception that they are hired over men on the basis of improving diversity. For me, this led to a feeling that I had to go above and beyond to prove my place."

MIKAELA KEIR  
PROCESS ENGINEER  
NZ STEEL

#INWED19  
#TRANSFORMTHEFUTURE



"Our biggest challenge is attracting women into Engineering!

That's why I want to create a positive work environment that increases engagement, and ensure there is future relevance by challenging traditional mindsets and work practices."

DEB MACCAULEY  
GM PEOPLE & CULTURE  
LONGVELD

#INWED19  
#TRANSFORMTHEFUTURE



"I'm sure creating a diversity of career paths that allows for different life stages and work life balance would be a benefit to all involved in the engineering community."

AMY WILLIAMS  
STRUCTURAL TEAM  
LEADER  
GHD

#INWED19  
#TRANSFORMTHEFUTURE



"I'm really passionate to be a successful and efficient structural engineer for the design of civil structures, and contribute to large-scale civil engineering projects internationally."

NIUSHA NAVABIAN  
TEACHING ASSISTANT &  
PHD RESEARCHER FOR  
CIVIL ENGINEERING  
AUCKLAND UNIVERSITY  
OF TECHNOLOGY

#INWED19  
#TRANSFORMTHEFUTURE



"At more senior levels in business, masculine traits are still very much linked to effective leadership - competitiveness, assertiveness, dominance.

Businesses are starting to understand that more feminine communal traits are as effective, if not more. We need to be encouraging this and role modelling positive outcomes."

SUE BRADLEY  
BUSINESS MANAGEMENT,  
STRATEGY & EMERGING  
TECHNOLOGY  
BECA

#INWED19  
#TRANSFORMTHEFUTURE



"The worst thing you can say to me is 'but it's always been done this way'. That's guaranteed to make steam come out of my ears!"

PAM ROA  
MANAGING DIRECTOR  
LONGVELD

#INWED19  
#TRANSFORMTHEFUTURE



"I love working alongside talented, passionate and creative people, and having an environment that supports problem solving and thinking outside the norm. It's so inspiring and motivating to be part of a team that is bringing innovation to life."

ANYA VALYASHKO  
MARKETING MANAGER  
TECTONUS

#INWED19  
#TRANSFORMTHEFUTURE



"I was told from a young age that women have to do a job better than men in order to be treated as equal. Any woman buying into this type of thinking is going to be limiting themselves on so many levels."

LIZ FROST  
GM, WELDING SUPERVISOR  
& WELDING INSPECTOR  
WELD I.T. LTD

#INWED19  
#TRANSFORMTHEFUTURE



"As an engineer, you always face new challenges and should be able to propose appropriate solutions for them."

NEGAR GHARAHSHIR  
STRUCTURAL ENGINEER  
STRUCTEX

#INWED19  
#TRANSFORMTHEFUTURE



"Women think differently to their male counterparts. This is an asset to any company to have this diversity."

AUDSLEY JONES  
HERA SCHOLAR + PHD  
CANDIDATE AT THE  
UNIVERSITY OF  
CANTERBURY

#INWED19  
#TRANSFORMTHEFUTURE



"Being an engineer gives me great satisfaction when I see my design built. Engineering is constantly changing the world for good, and it provides me the opportunity to have a direct impact on the world and to solve problems that are important to society."

TING WANG  
CIVIL ENGINEER  
TONKIN + TAYLOR

#INWED19  
#TRANSFORMTHEFUTURE







**Chair** | Joint Managing Director Hydraulink Fluid Connectors Noel Davies

## Interested in donating?

Contact our Secretariat Dr Wolfgang Scholz for further details on +64 21 945 159 or via email on [wolfgang.scholz@hera.org.nz](mailto:wolfgang.scholz@hera.org.nz)

## HERA Foundation reviewed its trust deed and developed a future strategy.

**It's all part of our quest to promote the study and understanding of ferrous and non-ferrous metals in engineering through an independent charitable trust.**

### Our income

Our total income was \$312k – obtained through HERA House earnings, donations and interest on an endowment fund offered in support of our key objectives.

About 33% of these funds were transferred back to industry via a Grant to HERA to run a number of projects and award sponsorships. The reminder goes back into administering and future proofing our asset HERA House.

### Our grants

Continuing our efforts to drive research and industry development, our Grant to HERA was \$102,312 for FY2018/19.

In an effort to ensure our research finds its application we supported the development and publication of a design guide on sliding hinges as used in steel construction by Auckland University of Technology and University of Auckland.

For the AGGAT renewable energy program, UoA PhD student Shoulong Dong completed his third and last year of his HERA Foundation scholarship. This looked at the development of an Expert Design Tool to simplify design tasks within an Organic Rankine Cycle (ORC) plant and help assess prospective heat resources for ORC application.

# Report from our HERA Foundation Chair

Support was also given to a business development initiative headed by our Former Director Dr Wolfgang Scholz. He's investigating the economic and technical viability of all-weather cycle and pedestrian paths both on the ground and elevated - dubbed the "Skycycle Project." A draft paper on the concept has been delivered and will be used for consultation with interested parties in an upcoming industry workshop to explore member and general interest.

### Supporting professional development

The Foundation's visiting scholar for this financial year was Arrie van Niekerk - a leading specialist facilitator on Theory of Constraints (TOC).

Arrie says improvement of more than 20% is experienced regularly, within the same infrastructure with the same people, but with a different mental framework. A two day training course was held in Auckland and Christchurch plus an individual training session for HERA staff with very positive attendee feedback.

A new initiative supported this year came via HERA CEO Dr Troy Coyle - which was the establishment of a new student membership. We're proud to report that essential steps such in defining the student category, developing a marketing frame work, changing the HERA rules and receiving HERA Executive approval have been achieved. And, as part of our long-term commitment to this, we've started the development of a student design guide for worked steel construction design examples.

Once again, our student awards grant supported the University of Auckland Final Year Projects for Mechanical Engineering. With around 180 students and 90 projects on display – our sponsored category prize was awarded to students Nancy Zhou and Mildred Wong for 'Best Metals Project'. We were ecstatic to award this to two female students as we work to support and drive diversity of thought in industry.

### A new approach, look and strategy

Although we're HERA's charitable foundation, we've recognised that via our updated Charitable Trust Act we are required to run independently - leading to a change in our trustee's appointment rules and strategy focus to meet our trust's objectives - particularly in the skills development area. In practice this means not just relying on income from HERA House, but to actively raise more funds through sponsorship.

This has meant increasing our profile through the development of a new logo for us to symbolise the 'people' aspect of our work and of course connection to HERA itself. We'll also look to establish our own website in the coming months.

### Our future outlook

We're pro-actively investing in the future of our industry and dedicated to supporting its long-term success. And, we're certainly looking forward to the inception of exciting research and scholar programs recently outlined to our Trust.

As we pursue top class research, innovation and understanding of disruptive technologies to boost engagement and innovation within our workforce, I'd remind you that you have an opportunity to make a real difference.

A small donation can immediately have an impact on the future of our workforce and ability to share and foster expertise – because if our industry isn't willing to support itself, who will?

And as your Chairman, I'd like to encourage you to make a living donation now – not only to be able to see the positive difference your contribution can make, but also so you can benefit from the tax rebates you're given through supporting our charitable trust.

### Noel Davies

Chair

“We're looking forward to seeing the rewards of our efforts to promote and grow our metals industry.”



# Fostering a future focus in our NZ metals industry

## Thought leadership

### stirring the pot

Created by Metalheads for Metalheads

Hosted by

HERA



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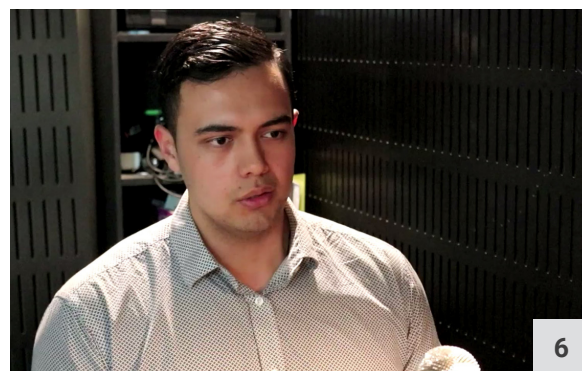
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## The greatest asset we have at HERA - is our people!

**And we know that it is our technical expertise that is trusted and valued by our membership the most.**

We take this responsibility very seriously, and know that it is a privilege to have such a strong voice within the metals industry.

It's why we're taken it upon ourself to use that voice for good. Challenging, informing and inspiring our industry to look past business as usual and adopt a future focus. We want long term sustainability - and it can only come if our members want it too.

### Encouraging innovation uptake

There is a real reservation for our members to delve into the innovation space. It's unknown - and challenges the traditional business model that most are used to operating within.

To make it more familiar, we've started preparing and publishing a series of innovation case studies showcasing our members journeys in this space.

The purpose being to share the practical realities of innovation and make it more relatable to our membership. We believe this is an important step in providing confidence to adopt a innovation mindset, share lessons with the wider membership and spark innovative thinking.

So far we have nine companies interested in working

on case studies with us, and drafts are in review.

### Stirring the Pot podcast

For some time, our members had been telling us that they were too time poor to read our articles or keep up with the latest trends in industry.

Not surprisingly - finding a way to connect them to this information became our focus - launching our podcast series in April 2019. Stirring the Pot is practical conversations that get to the nuts and bolts of the metals industry here in Aotearoa.

The hope is to connect our membership with experts from around the world to address key industry challenges they're facing, as well as challenge them to think about the future of our industry more strategically.

### HERA Future Forum - 20/20 Vision

What lies ahead for our industry is a whole new landscape. As a \$3.3 billion industry contributing 1.3% to our national GDP, and employing >30,000 Kiwi's (BERL, 2018), one can't blame us for getting a little complacent and focused on the daily grind. But they can blame us for not making sure our industry has a future.

That's why, behind the scenes our team has been busy developing out a new conference offering that is focused on future trends likely to disrupt our industry.

This replaces our biannual Metals Conference and supports our clear remit to drive thinking and growth in research and innovation.

We need a mechanism to help us lead change and to shake our industry up to prepare and see what is ahead of them. And 20/20 Vision is it!

.....

**[1] Callaghan Innovation, Emily Allison** - the new breed of smart industry **[2] Callaghan Innovation, Ross Pearce** - how innovation drives the global economy **[3] HR Specialist, Alia Bojilova** - getting rid of the 'fluff' around resilience and wellbeing **[4] Metals NZ, Nick Collins**; **HERA, Troy Coyle & SCNZ, Darren O'Riley** - how to build a thriving metals sector **[5] Transformationalist Professor, Goran Roos** - the future of manufacturing in New Zealand **[6] Maori Hydraulic Engineer, Byron Konia** - addressing the skills gap through diversity **[7] Reddy Diamond, Renita Reddy** - rollforming ethical leadership **[8] Innovation Construction Consultant, Pamela Bell** - is pre-fab NZ's missing piece to the housing puzzle? **[9] The Human Resources, Rowan Larsen** - how to attract and retain top staff **[10] Industry 4.0 Specialist, Jan Polzer & HERA, Holger Heinzel** - ensuring you're a factory of the future in New Zealand.



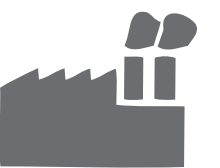
**Black Steel** - "Bournemouth", an architecturally designed steel framed residential home

# Member driven.

As enthusiastic partners - innovation is at the core of everything we do.

**Why? Because we want to engage more with our members - and innovation excites and motivates us to do so.**

It also allows us to adopt a future focus so that our members can be prepared for disruptions likely to come their way.

**620**   
member companies represented in FY19

**82.5**   
market share % of steel in Christchurch multi-storey buildings



Our membership at a glance

Platinum ‘Ordinary’

- Accurate Instruments NZ Ltd
- ACE Steel Beam Ltd
- ACH Consulting Limited
- Acme Engineering Ltd
- Acrow Limited
- Advance Boiler Services NZ Ltd (ABS)
- AECOM New Zealand Ltd
- Air Liquide New Zealand Ltd
- Airey Consultants Ltd
- AKSA Ltd
- Akzo Nobel Coatings Ltd
- Alpha Training & Development Centre Ltd
- Altex Coatings Ltd
- Antro Enterprises Limited
- Ara Institute of Canterbury
- Atco Steel Developments NZ Ltd
- Atlantic Engineering Co Ltd
- Auckland Council
- Aurecon New Zealand Ltd
- B E Hall Ltd (T/A Arc Welding & Safety Supplies)
- Babbage Consultants Ltd
- Ballance Agri-Nutrients Ltd
- Base Consulting Engineers Ltd
- Batchelar McDougall Consulting Ltd
- BB & Sons Ltd
- BCD Group Ltd
- BDS Vircon Ltd
- Beca Ltd
- Betteridge Engineering Ltd
- BGT Structures (Auckland) Ltd
- Bill Cassidy & Associates Ltd

- Birtson Engineering Ltd
- Black Steel Mobile Ltd
- Bloxam Burnett & Olliver Ltd
- Blueprint Consulting Limited
- Bob Doe Co
- BOC Gases New Zealand Ltd
- BPL Group Ltd (formally Bycroft Petherick Ltd)
- Bromley Steel Ltd
- BSK Consulting Engineers Ltd
- BT Mining Ltd (Bathurst)
- BTW Company Ltd
- Buchanan & Fletcher Ltd
- Bureau Veritas (NZ) Ltd
- Burleigh Engineering Ltd
- Cable Price (NZ) Ltd
- CADPRO Systems Ltd
- Calder Developments Ltd
- Caliber Design Ltd
- Calibre Consulting Ltd
- Carbonscape Ltd
- Cavotec MoorMaster Ltd
- Certified Welding Ltd
- Chambers Consultants Ltd
- Chapman Engineering Ltd
- Chapman Sanders Consultants Ltd
- Charles Consulting Ltd
- Chester Consultants Ltd
- Chris W Howell & Associates Ltd
- CLC Consulting Group Ltd
- Clendon Burns & Park Ltd
- Combustion Control Ltd
- Compusoft Engineering Ltd
- Coulter Engineering Services Ltd

- Create Ltd
- Crow Refractory Ltd
- CSP Coatings Ltd
- Cullen Engineering Co Ltd
- D C Weld Ltd
- D&H Steel Construction Limited
- David Smart Consulting Ltd
- Davidson Group Ltd
- Davis Ogilvie & Partners Ltd
- Day Consultants Limited
- DC Welding Ltd
- Design Engineering International Ltd
- Design Management Consultants Limited
- Design Production Ltd
- Dexion New Zealand Ltd
- DeziignWorks BOP Ltd
- DHC Consulting Limited
- Digitalweld Limited
- Dispatch and Garlick Ltd
- Dixon Manufacturing Ltd
- DKJ Welding Services LTD
- Dobbie Engineers Ltd
- Dodd Civil Consultants Ltd
- Don Thomson Consulting Engineers Ltd
- Dunning Thornton Consultants Ltd
- East Coast Steelwork Ltd
- Eastland Engineering 2004 Ltd
- EB McDonald Ltd
- Eckford Engineering 2002 Ltd
- Energyworks Ltd
- Engco Consulting Engineers Ltd (The Engineering Company Ltd)
- Engenium Ltd

- Engineering Design Consultants Limited (EDC)
- ENI Engineering Ltd
- Enovate Limited
- Envivo Ltd
- EQ STRUC Ltd
- Equipment Engineering (2008) Ltd
- ETS Engineers Ltd
- Ewing Construction Ltd
- Farra Engineering Limited
- Fitzroy Engineering Group Ltd
- Fletcher Construction Ltd
- Forbes Consultants Ltd
- Ford Steel Engineering Ltd
- Fortis Weld Inspection Ltd
- Fraser Thomas Limited
- Genesis Energy Ltd
- Genweld New Zealand Ltd
- GHD Ltd
- Gisborne Engineering Ltd
- Global Steel Detailing Ltd
- Gray Brothers Engineering Ltd
- Gray Consulting Engineers Ltd
- Grayson Engineering (2015) Ltd
- GVK Design & Engineering Consultants Ltd
- H J Asmuss & Co Ltd
- Hanlon & Partners Ltd
- Harrison Grierson Consultants Ltd
- Hawthorn Geddes Engineers & Architects Ltd
- Helix Flight Manufacturer Machines Ltd
- Hellacious Enterprises Ltd
- Henderson Structural Engineering
- Heslops Engineering Limited
- HFC: Harris Foster Consulting Group



FY19

## Our membership at a glance

- Hill Design Engineering Ltd
- Hilti NZ Ltd
- Hi-Spec Stainless Ltd
- Hobbs Enterprise Limited
- Holmes Consulting Limited Partnership
- Holmes Solutions Ltd
- Hornell Industries Ltd
- Hyland Consulting Engineering Ltd
- Iassure Inspection Limited
- Index Engineering Ltd
- Inspection & Test Services NZ Ltd
- Integrated Maintenance Group Limited (IMG Ltd)
- J Dodds Limited
- J&R Slecht Limited
- Jacobs New Zealand Ltd
- Jensen Steel Fabricators Ltd
- JF Contracting Ltd
- Jireh Contracting & Engineering (1998) Ltd
- John Jones Steel Ltd
- JP Engineering Services Ltd
- Juken New Zealand Ltd (Wairarapa)
- Kawerau Engineering Ltd
- Kemppi Australia Pty Ltd
- Kernohan Engineering Ltd
- Kerslake & Partners Ltd
- Kirk Roberts Consulting Engineers Ltd
- KiwiRail Limited
- KM Mechanical Ltd
- Konnect Fastening Systems
- Kordia Ltd
- Kraft Engineering Ltd
- Lautrec Technology Group Ltd
- Lewis Bradford & Associates Ltd
- LHT Design
- LM Structural Ltd
- Lough Downey Ltd
- Lowes Industries Ltd
- LTH Limited
- Lyttelton Engineering Ltd
- MA Corkery & Associates Ltd
- Mainarc Engineering Ltd
- Manktelow Consulting Engineers Ltd
- Manson Engineering
- Manukau Institute of Technology
- Markplan Consulting Ltd
- Marubeni-Itochu Steel Oceania Pty Ltd
- Materials & Testing Laboratories
- Matrix Applied Computing Ltd
- MaxiTRANS Industries (NZ) Pty Ltd
- McCannicks Waikanae Holdings
- McConnell Dowell Constructors Ltd
- MCU South Pacific Ltd
- MDL
- MEC Engineering Consultants Ltd
- Mercer Stainless Ltd
- Mercury NZ Limited
- Metal Test Ltd
- MH Design Ltd
- Milward Finlay Lobb Ltd
- Mitchell Vranjes Consulting Engineers Ltd
- Miyamoto International NZ Ltd
- MJH Engineering Ltd
- Modern Construction Ltd
- Modern Maintenance Products Ltd
- Monocrane 2010 Ltd
- Morgan Steel Ltd
- MS Engineering Ltd
- MSC Consulting Group Ltd
- MSME Ltd
- MTL NZ Limited
- MWS Otago Ltd
- MY Consulting Engineers Ltd
- Nagel Consultants Ltd
- NDT Weld NZ Ltd
- Net 2018 Limited
- New Zealand Refining Co Ltd
- New Zealand Steel Ltd (NZS)
- New Zealand Transport Agency (NZTA)
- Nick Morris Engineering Ltd
- Nigel Harwood Engineering Consultant Limited
- North End Engineering Ltd
- Nova Energy Ltd
- Novare Design Ltd
- NZ Army-Trade Training School
- NZ Welder Supplies Ltd
- OBD Consultants Ltd
- Offshore & Coastal Engineering Limited (formally OCEL)
- Onesteel NZ Limited
- Optimech International Ltd
- Opus International Consultants Ltd - Taupo
- Otahuhu Welding Ltd
- P J Hindin Engineering Ltd
- Pacific Steel NZ Ltd
- Page Macrae Engineering Ltd
- Pakuranga Engineering Ltd
- Patton Engineering Ltd
- Pegasus Engineering Ltd
- Pengelly Engineers Ltd
- Peter Swan Consulting Engineers
- Petone Engineering Ltd
- PFS Engineering Ltd
- Philips Diesel Ltd
- Pipe & Tube Welding Engineering Ltd
- Pipes NZ Limited
- Plant & Platform Consultants Ltd
- Plumb Consulting Engineers Ltd
- Port of Tauranga Limited
- Powell Fenwick Consultants Ltd
- Prendos New Zealand Limited
- Pressure Equipment Integrity (PEI) Ltd
- Progressive Engineering Co Ltd
- PT Industries Ltd
- PW Engineering Ltd
- Q Designz Limited
- Quoin Structural Consultants Ltd
- Qvalitas Compliance & Consultants Ltd
- R W & V Roberts Consultancy Ltd
- Randall & Associates Ltd
- RD Sullivan & Associates Ltd
- Real Steel Ltd
- Red Jacket Ltd
- Redco NZ Ltd
- Rees Engineering Ltd
- Robert Page Engineering Ltd
- Robin King Engineers Ltd
- RS Eng Ltd
- RSL Steel Enterprise (NZ) Ltd
- Ruamoko Solutions Ltd
- Sable Engineering Ltd
- SAFE Engineering Ltd
- Sawrey Consulting Engineers Ltd



FY19

- Sentinel Inspection Services Ltd
- SGS New Zealand Limited
- Sigma Consulting Engineers Ltd.
- Sigma Consulting Ltd
- Silvester Clark Consulting Engineers Ltd
- Simuserv Ltd
- SNC Steel Ltd
- SNP Welding Ltd
- Southern Institute of Technology
- Southern QA Ltd
- Speedfloor NZ
- Spencer Holmes Ltd
- Stainless Engineering Co Ltd
- Stantec New Zealand
- Steel Co Limited
- Steel Master Co Ltd
- Steel Pencil Holdings Limited
- Steelcraft Engineering
- Steltech Structural Limited
- Stephen Mitchell Engineers
- Sterile Services Ltd
- Stevensons Structural Engineers (1978) Ltd
- Stiffe Hooker Ltd
- Stiles & Hooker Ltd
- Stork Technical Services New Zealand Ltd
- Strata Group Consulting Ltd
- Stratum Consultants Ltd
- Stroude Ltd
- Structural Concepts Ltd
- Structure Design Ltd
- Structurflex Limited
- Tanker Engineering Specialists Ltd
- Tasman SV Consulting

- Taylors Manufacturing Limited
- Techlogic NZ
- Technix Industries Limited
- Tectonus Limited
- Texco Steel Ltd
- TH Consultants Ltd
- The Fletcher Construction Co Ltd - Trading as Piletech
- The Market Intelligence Co Ltd
- Thermarock Engineering Ltd
- Thorburn Consultants (NZ) Ltd
- Thorne Dwyer Structures Ltd
- Tino Structures Limited
- Titan Marine Engineering Ltd
- TM Consultants Ltd
- Todd Engineering Ltd
- Toi Ohomai Institute of Technology
- Tomsoffroad & Custom Ltd
- Tonkin & Taylor Limited
- Total Industrial Limited
- Transport Design & Certification Ltd
- Transport Technology 2018 Ltd
- Transtech Dynamics Ltd
- Tray-dec (NZ) Ltd
- Triangle Steel Construction Ltd
- Tri-Guard Engineering Limited
- Tse Taranaki & Associates Limited
- Turnco Engineering Limited
- Two Degrees Mobile Ltd
- Universal Engineering Ltd
- University of Auckland & UniServices
- Verstoep & Taylor Ltd
- Vert-X Ltd

- Victoria University of Wellington
- VIP Steel Limited
- Vulcan Stainless Ltd
- Waikato Engineering Design Ltd
- Waikato Institute of Technology (WINTERC)
- Waikato Steel Fabricators (2015) Ltd
- Warren Engineering Ltd
- Watson Engineering
- Weld IT Ltd
- Weld Test New Zealand Limited
- Welding & Engineering Ltd
- Welding Engineers NZ Ltd
- Weldtrade Engineering Ltd
- Weldwell New Zealand Ltd
- Wellington Institute of Technology (WELTEC)
- Westarc Engineering Ltd
- WFM Limited
- Whakatiki Engineering (1984) Ltd
- Wilkinson Transport Engineers
- Worley Parsons New Zealand Ltd
- X-Ray Laboratories Ltd
- Zigliani Technologies Ltd

## Gold 'Associate'

- A & S Engineering Ltd
- A W Trinder Ltd
- ABB Power Limited
- Action Engineering Ltd
- Active Engineering Ltd
- Advanced Plasma Technology Ltd
- Aimecs Ltd

- Airwork (NZ) Ltd
- All Steel Services Ltd
- Allwin Steel Enterprises
- ALRO Truck Smash Repairs Ltd
- Alstom Northern Wagons Ltd
- Angus Robertson Mechanical Ltd
- Apex Greenhouses Ltd
- APV New Zealand Ltd
- ATCO Controls Ltd
- ATI Engineering Ltd
- Awesome Awnings Ltd
- Axiam Engineering Limited
- Babcock (NZ) Ltd
- Bailey Engineering Ltd
- Baker Cranes Limited
- BBC Technologies Ltd
- Bedford Engineering Ltd
- Bernie Jordan
- Best Bars Ltd
- Bitumen Equipment Ltd
- Bradken Dunedin Ltd
- Brightwater Limited
- CALD Enterprises Ltd
- Calder Stewart Steel Ltd
- Cambridge Welding Service (1953) Ltd
- Campbell Tube Products Ltd
- Canco Engineering Ltd
- CAS Enterprises Ltd
- CFM Engineering Ltd
- Chemical Industry Engineering Ltd
- Christian Church Community Trust
- Consolidated Engineering Company Ltd
- Contract Connections Ltd



- Cook Brothers Construction Ltd
- Courtney Engineering
- Croucher & Crowder Engineering Co Ltd
- Cuddon Limited
- Culham Engineering Co Ltd
- Dawn Group Ltd
- Del Engineering Ltd
- Dimond Limited
- Domett Trailers Ltd
- Donovan Group NZ Ltd
- Drury Construction Ltd
- DSK Engineering Ltd
- Duncan Agriculture Ltd
- Eastbridge Ltd
- Eastern Boiler Service
- Eastern Institute of Technology
- Ede Engineering Ltd
- EHL Group Ltd
- Engineering Contractors Ltd
- Enterprize Steel Ltd
- Etech Industries NZ Ltd (also Etech)
- E-Type Engineering Ltd
- Fairfax Industries (2011) Ltd
- Farmex Hawkes Bay Ltd
- Farmgear Ltd
- Felix Research Labs Ltd
- Fraser Fire & Rescue Ltd
- Fruehauf Limited
- Gamman Industrial Componentry Ltd
- General Engineering North Shore Ltd
- George Grant Engineering (GGE)
- Gisborne Development Incorporated
- GLG NZ Manufacturing Ltd
- Global Engineering Products Ltd
- Global Welding Supplies (GWS) Ltd
- GM Engineering Services
- Gray Construction Ltd
- Greymouth Petroleum
- GT Liddells Contracting Ltd
- Harford Greenhouses
- Hayes International Ltd
- HEB Construction Ltd
- Honnor Drilling Ltd
- Howard Wright Limited
- Hydraulink Fluid Connectors Ltd
- Hytools NZ Ltd
- Iain Codling Stainless Steel Ltd
- IBA Engineering Ltd
- Industrial Services South Auckland (ISSA) Ltd
- J&D McLennan Ltd
- Jay Cee Welding Ltd
- JCD Engineering Ltd
- Jetweld Engineering Ltd
- JP Marshall & Co Ltd
- KAS Customs Ltd
- Keith M J Adams Ltd
- Kerry Dines Ltd
- Lakeland Steel Products Ltd
- Laser Limited
- Laser Welding Ltd
- Linear Design Ltd
- Loader Construction Eng Ltd
- Longveld Ltd
- Mace Engineering Ltd
- Machine Part Welding & Engineering Ltd
- Maskell Productions Ltd
- MB Century Limited
- McEwans (Division of Cut & Fold Ltd)
- Metal Spray Suppliers (NZ) Ltd
- Michael Harris (NZ) Ltd
- Mike Christie Sheetmetals Ltd
- Millers Mechanical (NZ) Ltd
- Milmeq Limited
- Modern Transport Engineers Ltd
- Morgan Engineering & Marine Ltd
- Morgan O'Shea Engineering
- Morrow Equipment Co (NZ)
- Mouats Engineering Ltd
- MSC Engineering Ltd
- Mulcahy Engineering Ltd
- Multi Engineering Ltd
- Murray Landon Limited
- NDA Group Limited
- Necklen Engineering Ltd
- Nelson Reliance Eng Co Ltd
- Nelson Stud Welding Ltd
- Niven Engineering Ltd
- Noble Engineering Services Ltd
- North Shore Towbars 2006 Ltd
- NZMP Kauri Ltd
- Otago Polytechnic
- Otahuhu Engineering Ltd
- Outside Broadcasting Ltd
- Pacific Timber Engineering Ltd
- Parr & Co Limited
- Patchell Industries Ltd
- Pearson Engineering Ltd
- Peninsula Engineering Ltd
- Phoenix Steel Ltd
- Piako Transport Engineering
- Pilcher Engineering Ltd
- PLP Electropar
- Port of Napier Ltd
- Pro Custom Concepts Ltd
- Profab Central Engineering Ltd
- Pyramid Engineering Ltd
- Quality Auto Machinists (1988) Ltd
- Queenstown Engineering 2009 Ltd
- Q-West Boat Builders Ltd
- Razos Engineering Ltd
- Read Industrial Ltd
- Red Steel Limited
- Renold New Zealand Ltd
- Rex Barnes Engineering Ltd
- RNZAF
- Roadmaster Trailers Ltd
- Rocktec Ltd
- ROTIG Ltd
- Ruakaka Engineering Ltd
- Seaview Engineering Services Ltd
- Select Engineering Ltd
- Service Engineers Ltd
- Shape NZ
- Sharland Engineering Ltd
- SHIPCO 360
- Site Steel Ltd
- Skookum Technology Ltd
- Smartweld Ltd
- SMWT Ltd
- Snaga Industries Ltd
- Snorkel NZ Ltd
- South Pacific Industrial Ltd (SPIIND)



- Southern Cross Engineering Limited (SCE)
- Specialised Container Services Ltd
- Specialist Energy Engineering Developments (SEED) Ltd
- Stafford Engineering Ltd
- Stainless Down Under Ltd
- Stainless Steel & Aluminium Welding Academy Ltd
- Stark Bros Ltd
- Steelfort Engineering Company Ltd
- Steelpipe Limited
- Stud Welding New Zealand Ltd
- Superior Pak Ltd
- Taslo Engineering
- Tasman Engineering Company Ltd
- Technical Welding Services (1998)
- The Blacksmiths Ltd
- The School of Welding
- Tidd Ross Todd Ltd
- TP Mechanical & Engineering Ltd
- Track Industries Ltd
- Traction Lab Ltd
- Transfleet Equipment Ltd
- Transport & Engineering Ltd
- Trident 2000 Ltd
- Tru-Test DTS Limited
- Truweld Engineering Kerikeri Ltd
- Ullrich Aluminium Co Ltd
- Villa Maria Estate Ltd
- Wainuiomata Training Centre
- Waratah NZ Limited
- Warner Construction Ltd
- Webforge NZ Ltd

- Weld Fabrication Engineering Ltd
- Weld Tests Hawkes Bay Ltd
- Welding Services Nelson Ltd
- Welding Technology Ltd
- Wells & Boe Ltd
- Westside Welding Ltd
- Wilson Bros Engineering Ltd (SAECOWilson)
- Wilson Precast Construction Ltd
- Windsor Engineering Group Ltd
- Windsor Group Ltd - Ipsco Division
- WM Ross Engineering Ltd
- Wyma Engineering NZ Ltd
- Zealsteel Ltd
- Zeanova Ltd

Student

- Poyyta Lotfi Rad
- Rajnil Rohit Lal
- Mike Angelo Dela Fuente
- Taruki Gunawardana
- Andrew Kelly
- Rakshith Natesh
- Siavash Nourani
- Tao Xiong
- Sarah Lydia Elizabeth Lewis
- Paul Siviter
- Nainesh Praful Chheda
- Setu Raman Agarwal
- Aathira Nair
- Jaynie Ng
- Benjamin Hemara

- Jason Liu
- Dylan Townsend
- Liam van Mechelen
- Spencer Johnstone
- Ryan Orense
- Meilyka Amir
- Justin Bayangos
- Amanpal Sagoo
- Pouya Pouladi

Affiliate

- Leap NZ Ltd
- Blind Bolt Co
- HTC Ltd
- CoreBrace
- Downer Group
- Hawkins Infrastructure Ltd
- Fulton Hogan
- TBS Corporation Limited
- Vulcan Steel Ltd
- Welding Technology Inst of Australia

Reciprocal

- American Institute of Steel Construction
- American Welding Society
- Australasian Corrosion Association (ACA)
- Australian Steel Institute
- Bioenergy Association NZ (BANZ)
- British Constructional Steelwork Association (BCSA)
- Building Research Association of New Zealand (BRANZ)
- Canadian Inst of Steel Construction

- Candian Welding Bureau
- Competenz
- Crane Association of NZ
- DVS German Welding Society
- Fire & Emergency NZ Library
- Japan Welding Society
- National Library of New Zealand
- National Steel-Framed Housing Association (NASH)
- NZ Defence Industry Association
- NZ Geothermal Association (NZGA)
- NZ Institute of Economic Research
- NZ Marine Industry Association
- NZ Marine Industry Association
- PreFabNZ inc
- Steel Construction Institute (SCI)
- Steel Construction New Zealand (SCNZ)
- Straterra inc
- The Manufacturers’ Network
- Waikato Engineering Careers Association (WECA)



Part of HERA's role is to facilitate connection, collaboration and knowledge sharing for our NZ metals industry.

## Library #2

in 2018 member survey for providing the most member value

**You'd have to be living under a rock not to notice that the world is going digital at an exponential pace.**

It's why we're proud to have finally launched our digital library - meaning that our 30,000+ technical information resources are now searchable at the touch of a finger.

Our new system is a powerful feature-rich tool that constantly evolves and upgrades. Giving users access to not only our information resources – but others both locally and abroad. It has also allowed us to convert all our resources into a large collection within a single accurate database for real-time access to information. Providing clear navigation, ease of use,

and an efficient operating system.

This is a much more interactive service that will allow users to personalise their dashboard, set preferences and receive notifications when new resources of interest become available.

Having this understanding on hand will also ensure we're able to respond promptly and thoroughly to enquiries – particularly research ones.

Our digital library is still developing out, so at this stage not all of our resources are in digital format and will still come in hard copy form.

Moving forward we plan to do future upgrades like electronic formats, custom access to meet different needs, and improved navigation – so stay tuned!

# Digital information



**Kernohan Engineering** | A 25.5m long steel pipe bridge component loaded up for delivery for client Carter Holt Harvey.



## Knowledge sharing with industry

### Our expertise

#### We support our staff to be key influencers

HERA is a highly regarded professional organisation that opens doors for our staff. Our staff are often invited/nominated to join influential networks and Boards - including:

AS/NZS joint standards committees (often with Chair responsibilities); NZS standards committees, Metals NZ Executive, Sustainable Steel Council Executive, National Association of Steel Framed Housing Inc., University of Auckland's Department of Mechanical Engineering Industry Advisory Committee, Auckland University of Technology's Engineering Industry Advisory Committee, HERA Certifications, Steel Construction New Zealand, Assessors for Government grants, e.g. Endeavour funding, and the Structural Engineering Society of NZ

#### We offer our team to be part of something bigger

In FY19, gaining a new welding Engineer, Robert Ryan who brings more than 30 years experience in the welding trade. He held previous roles as Assistant Manager at the NZ Welding School and running his own welding consultancy business. He is now focused on upskilling our members.

#### Saying goodbye to key team players

FY19 saw the departure of our Structural Engineer, Jing Cao, who moved back to Australia. Jing played an integral role in the ComFlor SR project, as well as a project co funded by NASH and BRANZ to study the construction feasibility of light steel framed multi-storey residential buildings, as well as many other R&D and consultancy projects.

### Industry Development

- Korber, S., Siedlok, F., & Husted, K. (2018). Lean Startup, Design Thinking & Agile in Innovation Management. Accepted at ISPIM Connects 2018. Fukuoka, Japan.
- Korber, S., Siedlok, F. P., & Smith, P. (2019). Beyond 'soft skills': Arts and the Humanities in technology driven organisations. Accepted at EURAM 2019, Lisbon, Portugal.
- Korber, S., Siedlok, F. P., & Smith, P. (2019). Beyond 'soft skills': Arts and the Humanities in technology driven organisations. Accepted at MaDE 2019, Auckland, New Zealand.
- Krull, E, Husted, K., Habib, B., (2019), Technology roadmapping in NZ's heavy engineering industry, Manufacturing and Design New Zealand Conference, Auckland, NZ
- Habib, B., (2019), Industry Development roadmap, HERA internal report R5-87:2019, Auckland, NZ
- Habib, B., (2019), NZ Steel DRIDEX – The heart story, a case study on innovation in manufacturing, HERA internal report R5-86:2019, Auckland, NZ
- HERA, (2019) Steel's contribution to a circular economy and low carbon future Position: Report prepared for the Sustainable Steel Council. Auckland, NZ

# Publications & resources

### Structural Systems

- Hällmark R, Collin P, Hicks SJ. Post-installed shear connectors: Push-out tests of coiled spring pins vs. headed studs. 2019, Journal of Constructional Steel Research, 161, pp. 1-16, <https://doi.org/10.1016/j.jcsr.2019.06.009>
- Cao J, Bloodworth AG, Xu M. Efficient Two-Way Shear Grillage Model Solution for Bridge RC Four-Pile Caps under Wall Loading. 2019, ASCE, Journal of Bridge Engineering, 24(8) <https://ascelibrary.org/>
- Gunawardena YKR, Aslani F, Uy B, Kang W-H, Hicks S. Review of strength behaviour of circular concrete filled steel tubes under monotonic pure bending. 2019, Journal of Constructional Steel Research, 158, pp. 460-474, <https://doi.org/10.1016/j.jcsr.2019.04.010>
- Hobbacher AF, Karpenko M, Hicks SJ, Schneider P, Uy B. Establishing new brittle fracture provisions for the Australasian steel structures standards. 2019, Journal of Constructional Steel Research, 155, pp. 20-32, <https://doi.org/10.1016/j.jcsr.2018.12.018>
- Hällmark R, Collin P, Hicks SJ. Post-installed shear connectors: Fatigue push-out tests of coiled spring pins. 2019, Journal of Constructional Steel Research, 153, pp. 298-309, <https://doi.org/10.1016/j.jcsr.2018.10.017>

### Welding Centre

- Hafez Taheri, G. Charles Clifton, Pingsha Dong, Michail Karpenko, Gary M. Raftery, James B. P. Lim "Seismic test of the effective full penetration of T-butt welds in welded moment resisting connections". 12th Canadian Conference on Earthquake Engineering (CCEE 2019). 17-20 June 2019.
- Hafez Taheri, G. Charles Clifton, Pingsha Dong, Michail Karpenko, Gary M. Raftery, James B. P. "The Use of Effective Full Penetration of T-butt Welds in Welded Moment Connections". International Institute of Welding (IIW) Document: X-1955-19/XIII-2824-19/XV-1590-19.
- Hafez Taheri, G. Charles Clifton, Pingsha Dong, Michail Karpenko, Gary M. Raftery, James B. P. "Design of fillet welds". Internal HERA Report 2019.
- Hafez Taheri: "HERA report - Shear test and strength analysis of fillet welds based on the traction stress method". Internal HERA Report 2019.



**Page Macrae Engineering** - hopper and grab solution for Port of Newcastle, NSW, Australia



We're able to deliver value through income generated from several sources.

**But of most significance is the industry contribution we receive through the Heavy Engineering Research Levy Act 1978.**

The Heavy Engineering Research Levy Act, 1978 is a common good research levy imposed on all heavy engineering goods comprising items defined by certain tariff codes within the Act.

These are defined in Schedules 2 and 3 of the Act and put simply, cover heavy steel and welding consumable sales.

Broadly speaking, we use this levy for the promoting and conducting of research and other scientific work into or relating to the heavy engineering industry.

This can include:

- Establishing research facilities and equipment;
- Carrying out tests and experiments- eg. on materials or techniques;
- Maintaining our digital library and resources;
- Encouraging the study of heavy engineering research;
- Allocating grants;
- Holding lectures, seminars, exhibitions, and public meetings;
- Publications;
- Providing general advisory services;
- The acquisition of land and premises, and their maintenance;
- The erection of premises;
- Acquiring intellectual property;
- Refunding incorrect levy payments; and
- General administration of HERA activities.

# The levy in a nutshell





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NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION  
INCORPORATED

FINANCIAL STATEMENTS  
FOR THE YEAR ENDED 30 JUNE 2019

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# Financial statements & notes



**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED**

**Financial Statements  
For the Year Ended 30 June 2019**

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Statement of Financial Position	7
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**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED**

**Directory  
For the Year Ended 30 June 2019**

Registered office	Hera House 17-19 Gladding Place Manukau City Auckland
Number	218280
Nature of business	Research Association
Executive Committee Members	Troy Coyle (CEO HERA) Mike Lehan, Page & MacRae (Chair) Noel Davies, Hydraulink Fluid Connectors (HEERF Chair) Mathew Black, New Zealand Steel Ltd (Nominee of General Manager of NZ Steel) Dieter Adam, NZMEA Darren O'Riley, Steel Construction New Zealand Inc. (Co-opted)  <b><u>Ordinary and Associate Members</u></b> David Moore, Grayson Engineering Ltd Dave Anderson, John Jones Steel Mike Lehan, Page & MacRae Craig Stevenson, Aurecon New Zealand Ltd Jennifer Hart, BECA Raed El Sarraf, Opus International Consultants Matthew Kidson, Kernohan Engineering (Deputy Chair)
Independent auditor	RSM Hayes Audit Level 1, 1 Broadway, Newmarket 1023
Bankers	Bank of New Zealand ANZ Bank New Zealand Limited
Solicitor	Gaze Burt Auckland



**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Executive Committee's Report and Statement of Responsibility  
For the Year Ended 30 June 2019****Executive Committee's Report**

The Executive Committee of New Zealand Heavy Engineering Research Association Incorporated present this Annual Report, being the financial statements of the Association for the financial year ended 30 June 2019, and the independent auditor's report thereon.

**Statement of Responsibility**

The Executive Committee is responsible for the maintenance of adequate accounting records and the preparation and integrity of the financial statements and related information.

The independent external auditors, RSM Hayes Audit, have audited the financial statements and their report appears on pages 3 to 4.

The Executive Committee is also responsible for the systems of internal control. These are designed to provide reasonable but not absolute assurance as to the reliability of the financial statements, and to adequately safeguard, verify and maintain accountability for assets, and to prevent and detect material misstatements.

Appropriate systems of internal control have been employed to ensure that all transactions have been executed in accordance with authority and correctly processed and accounted for in the financial records. The systems are implemented and monitored by suitably trained personnel with an appropriate segregation of authority and duties. Nothing has come to the attention of the Executive Committee to indicate that any material breakdown in the functioning of these controls, procedures and systems has occurred during the year under review.

The financial statements are prepared on a going concern basis. Nothing has come to the attention of the Executive Committee to indicate that the entity will not remain a going concern in the foreseeable future.

In the opinion of the Executive Committee:

- The statement of comprehensive revenue and expense is drawn up so as to present fairly, in all material respects, the results of the entity for the financial year ended 30 June 2019;

- The statement of financial position is drawn up so as to present fairly, in all material respects, the state of affairs of the entity as at 30 June 2019;

The statement of cash flows is drawn up so as to present fairly, in all material respects, the state of cash flows of the entity for the financial year ended 30 June 2019.

- There are reasonable grounds to believe that the entity will be able to pay its debts as and when they fall due.

For and on behalf of the Executive Committee:

Chairman

Date

CEO

Date

**Independent Auditor's Report****To members of  
New Zealand Heavy Engineering Research  
Association Incorporated****Opinion**

We have audited the financial statements of New Zealand Heavy Engineering Research Association Incorporated (the Society), which comprise:

- the statement of financial position as at 30 June 2019;
- the statement of comprehensive revenue and expense for the year then ended;
- the statement of changes in net assets/equity for the year then ended;
- the statement of cash flows for the year then ended; and
- the notes to the financial statements, which include significant accounting policies.

In our opinion, the accompanying financial statements on pages 5 to 17 present fairly, in all material respects, the financial position of New Zealand Heavy Engineering Research Association Incorporated as at 30 June 2019, and its financial performance and its cash flows for the year then ended in accordance with Public Benefit Entity Standards Reduced Disclosure Regime issued by the New Zealand Accounting Standards Board.

**Basis for opinion**

We conducted our audit in accordance with International Standards on Auditing (New Zealand) (ISAs (NZ)). Our responsibilities under those standards are further described in the *Auditor's responsibilities for the audit of the financial statements* section of our report.

We are independent of the Society in accordance with Professional and Ethical Standard 1 (Revised) *Code of Ethics for Assurance Practitioners* issued by the New Zealand Auditing and Assurance Standards Board, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other than in our capacity as auditor we have no relationship with, or interests in, the Society.

**Other information**

The Executive Committee is responsible for the other information. The other information comprises the directory and the Executive Committee's report and statement of responsibility on pages 1 to 2 (but does not include the financial statements and our auditor's report thereon), which we obtained prior to the date of this auditor's report. Our opinion on the financial statements does not cover the other information and we do not express any form of audit opinion or assurance conclusion thereon.





In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. If, based on the work we have performed on the other information that we obtained prior to the date of this auditor's report, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

### Responsibilities of the executive committee for the financial statements

The Executive Committee is responsible, on behalf of New Zealand Heavy Engineering Research Association Incorporated (the Society), for the preparation and fair presentation of the financial statements in accordance with Public Benefit Entity Standards Reduced Disclosure Regime, and for such internal control as those charged with governance determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Executive Committee is responsible, on behalf of the Society, for assessing the Society's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Executive Committee either intend to liquidate the Society or to cease operations, or have no realistic alternative but to do so.

### Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with ISAs (NZ) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the decisions of users taken on the basis of these financial statements. A further description of the auditor's responsibilities for the audit of the financial statements is located at the XRB's website at:

<https://www.xrb.govt.nz/standards-for-assurance-practitioners/auditors-responsibilities/audit-report-8/>

### Who we report to

This report is made solely to the members. Our audit has been undertaken so that we might state to the members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Society and the members, for our work, for this report, or for the opinions we have formed.

RSM Hayes Audit  
Auckland

15 August 2019

## NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

### Statement of Comprehensive Revenue and Expense For the Year Ended 30 June 2019

	Notes	2019	2018
		\$	\$
Revenue from non-exchange transactions	11	2,093,173	2,229,068
Revenue from exchange transactions	11	1,019,491	1,169,984
<b>Total Revenue</b>		<b>3,112,664</b>	<b>3,399,052</b>
<b>Expenses</b>			
Employee salaries and wages		1,433,021	1,515,299
Member Services		222,069	265,229
Seminar Expenses		201,867	78,529
Consulting Expenses		126,900	460,898
External Research		329,345	399,226
HERA House Expenses		104,733	100,933
Depreciation Expense		106,450	102,525
Rent Expenses		310,024	276,220
Other expenses		247,612	256,007
<b>Total expenses</b>		<b>3,082,021</b>	<b>3,454,866</b>
Finance income		21,364	36,997
Finance costs		-	-
<b>Net finance income</b>		<b>21,364</b>	<b>36,997</b>
<b>Net surplus before tax</b>		<b>52,007</b>	<b>(18,817)</b>
Income tax expense	16	-	-
<b>Net surplus for the year</b>		<b>52,007</b>	<b>(18,817)</b>
Other comprehensive revenue and expense		-	-
<b>Total comprehensive revenue and expense for the year</b>		<b>52,007</b>	<b>(18,817)</b>

The above financial statements should be read in conjunction with the notes to the financial statements.



# NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

## Statement of Changes in Net Assets/Equity For the Year Ended 30 June 2019

	Accumulated comprehensive revenue and expense	Total
	\$	\$
Closing equity 30 June 2017	1,720,152	1,720,152
Total comprehensive revenue and expense for the year	(18,817)	(18,817)
Closing equity 30 June 2018	<u>1,701,335</u>	<u>1,701,335</u>
Total comprehensive revenue and expense for the year	52,007	52,007
Closing equity 30 June 2019	<u>1,753,342</u>	<u>1,753,342</u>




The above financial statements should be read in conjunction with the notes to the financial statements.

# NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED


## Statement of Financial Position As at 30 June 2019

	Notes	2019	2018
		\$	\$
<b>ASSETS</b>			
<b>Current assets</b>			
Cash and cash equivalents	5	244,488	257,091
Receivables from exchange transactions	6	128,456	203,322
Receivables from non-exchange transactions	6	205,601	192,078
Related party Loan	7	171,340	271,340
Investments- Term deposits (bank)		849,019	630,562
Prepayment		40,274	-
Inventories		<u>1,861</u>	<u>8,847</u>
		1,641,039	1,563,240
<b>Non-current assets</b>			
Property, plant and equipment	8	<u>260,285</u>	<u>326,676</u>
		260,285	326,676
<b>TOTAL ASSETS</b>		<u>1,901,324</u>	<u>1,889,916</u>
<b>LIABILITIES</b>			
<b>Current liabilities</b>			
Payables (from exchange transactions)	10	61,257	67,676
Payables (from non- exchange transactions)	10	34,388	75,739
Employee benefits		<u>52,337</u>	<u>45,166</u>
		147,982	188,581
<b>TOTAL LIABILITIES</b>		<u>147,982</u>	<u>188,581</u>
<b>TOTAL NET ASSETS</b>		1,753,342	1,701,335
<b>Net Assets / Equity</b>			
Accumulated comprehensive revenue and expense		1,753,342	1,701,335
<b>Total Net Assets / Equity</b>		<u>1,753,342</u>	<u>1,701,335</u>

For and on behalf of the Board:

  
Chairperson

13/8/19  
Date

  
CEO

8th August 2019  
Date



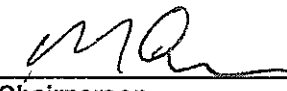
The above financial statements should be read in conjunction with the notes to the financial statements.



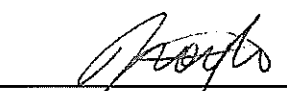
**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Statement of Financial Position  
As at 30 June 2019**

	Notes	2019	2018
<b>ASSETS</b>			
		\$	\$
<b>Current assets</b>			
Cash and cash equivalents	5	244,488	257,091
Receivables from exchange transactions	6	128,456	203,322
Receivables from non-exchange transactions	6	205,601	192,078
Related party Loan	7	171,340	271,340
Investments- Term deposits (bank)		849,019	630,562
Prepayment		40,274	-
Inventories		1,861	8,847
		<u>1,641,039</u>	<u>1,563,240</u>
<b>Non-current assets</b>			
Property, plant and equipment	8	260,285	326,676
		<u>260,285</u>	<u>326,676</u>
<b>TOTAL ASSETS</b>		<u><b>1,901,324</b></u>	<u><b>1,889,916</b></u>
<b>LIABILITIES</b>			
<b>Current liabilities</b>			
Payables (from exchange transactions)	10	61,257	67,676
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Employee benefits		52,337	45,166
		<u>147,982</u>	<u>188,581</u>
<b>TOTAL LIABILITIES</b>		<u><b>147,982</b></u>	<u><b>188,581</b></u>
<b>TOTAL NET ASSETS</b>		<b>1,753,342</b>	<b>1,701,335</b>
<b>Net Assets / Equity</b>			
Accumulated comprehensive revenue and expense		1,753,342	1,701,335
<b>Total Net Assets / Equity</b>		<u><b>1,753,342</b></u>	<u><b>1,701,335</b></u>

For and on behalf of the Board:

  
Chairperson

13/8/19  
Date

  
CEO

8th August 2019  
Date



The above financial statements should be read in conjunction with the notes to the financial statements.

**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Statement of Cash Flows  
For the Year Ended 30 June 2019**

	Notes	2019 \$	2018 \$
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>			
Receipts from members		3,174,007	3,611,834
Interest received		21,364	36,997
Cash paid to suppliers and employees		(3,049,458)	(3,650,494)
<b>Net cash inflow from operating activities</b>		<u><b>145,913</b></u>	<u><b>(1,663)</b></u>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>			
Sales/(Purchases) of term deposits		(218,457)	(216,119)
Purchase of property, plant and equipment	8	(40,059)	(84,578)
Proceeds from sale of property, plant and equipment		-	-
<b>Net cash outflow from investing activities</b>		<u><b>(258,516)</b></u>	<u><b>(300,697)</b></u>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>			
Repayment from related party loan		100,000	150,000
Loan to related party		-	-
<b>Net cash outflow from financing activities</b>		<u><b>100,000</b></u>	<u><b>150,000</b></u>
Net increase in cash and cash equivalents		(12,603)	(152,360)
Cash and cash equivalents at 1 July		257,091	409,451
<b>Cash and cash equivalents at 30 June</b>	5	<u><b>244,488</b></u>	<u><b>257,091</b></u>

The above financial statements should be read in conjunction with the notes to the financial statements.





**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****1. REPORTING ENTITY**

New Zealand Heavy Engineering Research Association Incorporated (the "Society") is an Incorporated Society which was incorporated under the Incorporated Society Act 1908 on the 30th day of August 1978.

These financial statements were authorised for issue by the Executive Committee on the date indicated on page 7.

**2. BASIS OF PREPARATION***a) Statement of compliance*

The financial statements have been prepared in accordance with New Zealand Generally Accepted Accounting Practice ("NZ GAAP"). Not-For-Profit PBE IPSAS – RDR.

The Society is a public benefit entity for the purpose of financial reporting and the financial statements comply with Public Benefit Entity Standards Reduced Disclosure Regime ("PBE Standards RDR"). For the purposes of complying with NZ GAAP, the Society is a public benefit not-for-profit entity and is eligible to apply PBE Standards RDR on the basis that it does not have public accountability and it is not defined as large. All reduced disclosure regime exemptions have been adopted.

*b) Measurement basis*

The financial statements have been prepared on the historical cost basis.

*c) Functional and presentation currency*

The financial statements are presented in New Zealand Dollars (\$), which is the functional and presentation currency, rounded to the nearest dollar.

There has been no change in the functional currency of the Society during the year.

*d) Changes in accounting policy*

There is no change in accounting policy during the year.

**3. SIGNIFICANT JUDGMENTS AND ESTIMATES**

The preparation of the Society's financial statements requires management to make judgements, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the accompanying disclosures, and the disclosure of contingent liabilities. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities affected in future periods.

*a) Judgements:*

In the process of applying the Society's accounting policies, management has made the following judgements, which have the most significant effect on the amounts recognised in the financial statements:

- Revenue recognition: the recognition of non-exchange revenue (conditions vs restrictions);
- Classification of non-financial assets as cash generating or non-cash generating assets for the purposes of assessing impairment indicators and impairment testing.

The majority of property, plant and equipment held by the Society is classified as non-cash generating assets.

*b) Assumptions and estimation uncertainties*

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are described below. The Society based its assumptions and estimates on parameters available when the financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising beyond the control of the Society. Such changes are reflected in the assumptions when they occur.

**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****3. SIGNIFICANT JUDGMENTS AND ESTIMATES (CONT'D)***b) Assumptions and estimation uncertainties (cont'd)**Useful lives and residual values*

The useful lives and residual values of assets are assessed using the following indicators to inform potential future use and value from disposal:

- The condition of the asset based on the assessment of experts employed by the Society;
- The nature of the asset, its susceptibility and adaptability to changes in technology and processes.
- The nature of the processes in which the asset is deployed
- Availability of funding to replace the asset
- Changes in the market in relation to the asset

*Changes in accounting estimates*

There have been no changes in the accounting estimates for the current reporting period.

**4. SIGNIFICANT ACCOUNTING POLICIES***a) Revenue*

Revenue is recognised to the extent that it is probable that the economic benefits or service potential will flow to the Society and the revenue can be reliably measured, regardless of when the payment is being made. Revenue is measured at the fair value of the consideration received or receivable, taking into account contractually defined terms of payment and excluding taxes or duty.

The specific recognition criteria described below must also be met before revenue is recognised.

*i) Revenue from exchange transactions**Revenue from the sale of goods*

Revenue from the sale of goods in the course of ordinary activities is measured at the fair value of the consideration received or receivable, net of returns, trade discounts and volume rebates.

Revenue is recognised when the significant risks and rewards of ownership have been transferred to the customer, recovery of the consideration is probable, the associated costs and possible return of goods can be estimated reliably, there is no continuing management involvement with the goods, and the amount of revenue can be measured reliably.

*Rendering of services*

Revenue is measured at the fair value of the consideration received or receivable under the contract or agreement.

Where the outcome of a transaction involving the rendering of services can be estimated reliably, revenue is recognised by reference to the stage of completion based on the progress of work performed.

*Interest received*

Interest income is recorded using the effective interest rate. Effective interest rate is the rate that exactly discounts the estimated future cash payments or receipts over the expected life of the financial instrument or a shorter period, where appropriate, to the net carrying amount of the financial asset or liability.

Interest income is included in finance income in the statement of comprehensive revenue and expense.

*ii) Revenue from non-exchange transactions*

Non-exchange transactions are those where the Society receives an inflow of resources ((i.e. cash and other tangible or intangible items) but provides no (or nominal) direct consideration in return.

With the exception of services-in-kind, inflows of resources from non-exchange transactions are only recognised as assets where both:

- It is probable that the associated future economic benefit or service potential will flow to the Society, and
- Fair value is reliably measurable.

Inflows of resources from non-exchange transactions that are recognised as assets are recognised as non exchange revenue, to the extent that a liability is not recognised in respect to the same inflow.



**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****4. SIGNIFICANT ACCOUNTING POLICIES (CONT'D)****ii) Revenue from non-exchange transactions (cont'd)**

Liabilities are recognised in relation to inflows of resources from non-exchange transactions when there is a resulting present obligation as a result of the non-exchange transactions, where both:

- It is probable that an outflow of resources embodying future economic benefit or service potential will be required to settle the obligation, and
- The amount of the obligation can be reliably estimated.

The following specific recognition criteria in relation to the Society's non-exchange transaction revenue streams must also be met before revenue is recognised.

**Grants, Donations, Legacies and bequests**

The recognition of non-exchange revenue from Grants, Donations, Legacies and bequests depends on the nature of any stipulations attached to the inflow of resources received, and whether this creates a liability (i.e. present obligation) rather than the recognition of revenue.

Stipulations that are 'conditions' specifically require the Society to return the inflow of resources received if they are not utilised in the way stipulated, resulting in the recognition of a non-exchange liability that is subsequently recognised as non-exchange revenue as and when the 'conditions' are satisfied.

Stipulations that are 'restrictions' do not specifically require the Society to return the inflow of resources received if they are not utilised in the way stipulated, and therefore do not result in the recognition of a non-exchange liability, which results in the immediate recognition of non-exchange revenue.

**b) Employee benefits****i) Short term employee benefits**

Short-term employee benefit liabilities are recognised when the Society has a legal or constructive obligation to remunerate employees for services provided with 12 months of reporting date, and is measured on an undiscounted basis and expensed in the period in which employment services are provided.

**c) Finance income**

Finance income comprises interest income on financial assets. Interest income is recognised as it accrues in surplus or deficit, using the effective interest method.

**d) Financial instruments**

Financial assets and financial liabilities are recognised when the Society becomes a party to the contractual provisions of the financial instrument.

The Society derecognises a financial asset when the contractual rights to the cash flows from the asset expire, or it transfers the rights to receive the contractual cash flows in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred. Any interest in transferred financial assets that is created or retained by the Society is recognised as a separate asset or liability.

The Society derecognises a financial liability when its contractual obligations are discharged, cancelled, or expire.

The Society derecognises financial assets and financial liabilities when there has been significant changes to the terms and/or the amount of contractual payments to be received/paid.

Financial assets and liabilities are offset and the net amount presented in the statement of financial position when, and only when, the Society has a legal right to offset the amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

The Society classifies financial assets as loans and receivables.

The Society classifies financial liabilities as at amortised cost.

Financial instruments are initially measured at fair value, plus for those financial instruments not subsequently measured at fair value through surplus or deficit, directly attributable transaction costs.

Subsequent measurement is dependent on the classification of the financial instrument, and is specifically detailed in the accounting policies below.

**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****4. SIGNIFICANT ACCOUNTING POLICIES (CONT'D)****d) Financial instruments (cont'd)****i) Loans and receivables**

Loans and receivables are financial assets with fixed or determinable payments that are not quoted in an active market, and are measured initially at fair value.

Loans and receivables are subsequently measured at amortised cost using the effective interest method, less any impairment losses.

Loans and receivables comprise cash and cash equivalents and receivables.

Cash and cash equivalents in the statement of financial position comprise cash at bank and in hand and short-term deposits with an original maturity of three months or less that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value.

For the purposes of the statement of cash flows, cash and cash equivalents consist of cash and cash equivalents as defined above.

**ii) Financial liabilities at amortised cost**

Financial liabilities classified as at amortised cost are non-derivative financial liabilities that are not classified as fair value through surplus or deficit financial liabilities.

Financial liabilities classified as amortised cost are subsequently measured at amortised cost using the effective interest method.

Financial liabilities classified as amortised cost comprise payables.

**e) Impairment of non-derivative financial assets**

A financial asset not subsequently measured at fair value through surplus or deficit is assessed at each reporting date to determine whether there is objective evidence that it is impaired. A financial asset is impaired if there is objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the asset, and that the loss event(s) had an impact on the estimated future cash flows of that asset that can be estimated reliably.

Objective evidence that financial assets are impaired includes default or delinquency by a counterparty, restructuring of an amount due to the Society on terms that the Society would not consider otherwise, indications that a counterparty or issuer will enter bankruptcy, adverse changes in the payment status of borrowers or issuers, economic conditions that correlate with defaults or the disappearance of an active market for a security.

**i) Financial assets classified as loans and receivables**

The Society considers evidence of impairment for financial assets measured at amortised cost (loans and receivables) at both a specific asset and collective level.

All individually significant assets are assessed for specific impairment. Those found not to be specifically impaired are then collectively assessed for any impairment that has been incurred but not yet identified.

Assets that are not individually significant are collectively assessed for impairment by grouping together assets with similar risk characteristics.

In assessing collective impairment the Society uses historical trends of the probability of default, the timing of recoveries and the amount of loss incurred, adjusted for management's judgement as to whether current economic and credit conditions are such that the actual losses are likely to be greater or less than suggested by historical trends.

An impairment loss in respect of a financial asset measured at amortised cost is calculated as the difference between its carrying amount and the present value of the estimated future cash flows discounted at the asset's original effective interest rate. Losses are recognised in surplus or deficit and reflected in an allowance account against loans and receivables. Interest on the impaired asset continues to be recognised.

When an event occurring after the impairment was recognised causes the amount of impairment loss to decrease, the decrease in impairment loss is reversed through surplus or deficit.



**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****4. SIGNIFICANT ACCOUNTING POLICIES (CONT'D)****f) Property, plant and equipment****i) Recognition and measurement**

Items of property, plant and equipment are initially measured at cost, except those acquired through non exchange transactions which are instead measured at fair value as their deemed cost at initial recognition.

Items of property, plant and equipment are subsequently measured at cost less accumulated depreciation and accumulated impairment losses.

Cost includes expenditure that is directly attributable to the acquisition of the asset.

When parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items (major components) of property, plant and equipment.

Any gain or loss on disposal of an item of property, plant and equipment (calculated as the difference between the net proceeds from disposal and the carrying amount of the item) is recognised in surplus or deficit.

Upon disposal of revalued items of property, plant and equipment, any associated gain or losses on revaluation to that item are transferred from the revaluation surplus to accumulated surplus.

**ii) Subsequent expenditure**

Subsequent expenditure is capitalised only when it is probable that the future economic benefits associated with the expenditure will flow to the Society. Ongoing repairs and maintenance is expensed as incurred.

**iii) Depreciation**

For property, plant and equipment, depreciation is based on the cost of an asset less its residual value and for buildings is based on the revalued amount less its residual value.

Significant components of individual assets that have a useful life that is different from the remainder of those assets, those components are depreciated separately.

Depreciation is recognised in surplus or deficit on a straight-line basis over the estimated useful lives of each component of an item of property, plant and equipment.

The estimated useful lives are:

Office Equipment	15%-40%
Office Furniture	15%
Fixture & Fittings	15%
Training Centre	25%
Motor Vehicles	20%
Metallurgy Lab	15%
House Refurbishment	10%

Depreciation methods, useful lives, and residual values are reviewed at reporting date and adjusted if appropriate.

**g) Impairment of non-financial assets**

The carrying amounts of the Society's non-financial assets are reviewed at each reporting date to determine whether there is any indication of impairment. If any such indication exists, then the asset's recoverable amount is estimated.

The recoverable amount of an asset or CGU is the greater of its value in use and its fair value less costs to sell. In assessing value in use, the future remaining service potential (for non-cash-generating assets) is discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or CGU.

Impairment losses are recognised in surplus or deficit. An impairment loss is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortisation, if no impairment loss had been recognised.

**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****4. SIGNIFICANT ACCOUNTING POLICIES (CONT'D)****h) Equity**

Equity is the Association's interest in the Society measured as the difference between total assets and total liabilities. Equity is made up of the following components:

**Accumulated comprehensive revenue and expense**

Accumulated comprehensive revenue and expense is the Society's accumulated surplus or deficit since the formation of the Society adjusted for transfers to/from specific reserves.

**i) Goods and services tax**

All amounts are shown exclusive of goods and services tax (GST), except for receivables and payables that are stated inclusive of GST.

**j) Leases****i) Classification and treatment**

Leases in terms of which the Society assumes substantially all the risks and rewards of ownership are classified as finance leases.

Upon initial recognition the leased asset is measured at an amount equal to the lower of its fair value and the present value of the minimum lease payments. Subsequent to initial recognition, the asset is accounted for in accordance with the accounting policy applicable to that asset.

The Society does not have finance leases.

Operating leases are leases that do not transfer substantially all the risks and benefits incidental to ownership of the leased item to the Society. Operating lease payments are recognised as an operating expense in surplus or deficit on a straight-line basis over the lease term.

**k) Inventories**

Inventory is measured at cost upon initial recognition. To the extent that inventory was received through non-exchange transactions (for no cost or for a nominal cost), the cost of the inventory is its fair value at the date of acquisition.

After initial recognition, inventories held for resale are valued at the lower of cost and net realisable value.

Net realisable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale, exchange or distribution.



**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****5. CASH AND CASH EQUIVALENTS**

	2019 \$	2018 \$
Cash and cash equivalents include the following components:		
Current Account	87,193	204,839
Call Account	157,295	52,252
	<u>244,488</u>	<u>257,091</u>

The Association has a Visa credit card facility with Bank of New Zealand. The total limit of all credit cards is \$30,000 (2017: \$30,000).

**6. RECEIVABLES**

	2019 \$	2018 \$
Receivables from exchange transactions		
Accounts receivable	128,456	216,446
Bad debt provision	-	13,124
	<u>128,456</u>	<u>203,322</u>

**Receivables from non-exchange transactions**

Accrued income - steel and welding levies	205,601	192,078
	<u>205,601</u>	<u>192,078</u>

At 30 June, the ageing analysis of receivables from exchange transactions is as follows:

	Total	< 30 days	30-60 days	61-90 days	>90 days
	\$	\$	\$	\$	\$
2019	128,456	95,198	24,301	7,941	1,017
2018	216,446	177,073	10,948	1,280	27,145

**7. RELATED PARTY TRANSACTIONS AND BALANCES**

Heavy Engineering Educational Research Foundation (HEERF) is a related party to the Society. The Chairman, Deputy Chairman and Executive Members of the Society are HEERF's trustees.

**Related party transactions**

The Society has the related parties transactions with HERA Foundation during the year as follows:

- building management fees of \$nil (2018: \$5,000) and administration fees of \$4,653 (2018: \$10,000) for the management and administration of HERA Foundation's building, HERA House
- rental expenses on buildings of \$310,024 (2018: \$276,220)
- receipts of grants totaling \$27,315 (2018: \$92,500)
- interest income received of \$21,364 (2018: \$19,112)
- repayment of related party loan of \$100,000 (2018: \$150,000)

**Related party balances**

The Society's board approved the loan to HEERF. The interest rate on this related party loan during the year was 3.40% (Last Year -3.40%). The repayment of the loan is on demand therefore disclosed as current asset. There is no security held on this related party loan. The outstanding balance as at 30 June 2019 is \$171,340 (2018: \$271,340).

All transactions were conducted on an arm's length basis.

**Key management personnel compensation**

The total remuneration paid to key management personnel for the year was \$672,019 (2018: \$529,089). The total number of key management personnel was 4 (2018: 4).

There were no other material related party transactions as at balance date, and there are no other material balances outstanding regarding transactions with related parties are necessarily disclosed.

**8. PROPERTY, PLANT AND EQUIPMENT****Reconciliation of property, plant and equipment for the year ended 30 June 2019**

	Opening balance	Additions	Disposals	Depreciation	Closing balance
Office Furniture	92,808	903	-	31,519	62,192
Fixtures & Fittings	5,279	3,362	-	1,586	7,055
HERA House Refurbishment	34,708	-	-	5,110	29,598
Motor Vehicles	101,244	-	-	35,671	65,573
Office Equipment	50,112	35,794	-	27,207	58,699
Training Equipment	42,525	-	-	5,357	37,168
	<u>326,676</u>	<u>40,059</u>	<u>-</u>	<u>105,450</u>	<u>260,285</u>

	2019			2018		
	Cost	Accumulated depreciation	Carrying value	Cost	Accumulated depreciation	Carrying value
Office Furniture	\$ 93,711	\$ 31,519	\$ 62,192	\$ 124,192	\$ 31,384	\$ 92,808
Fixtures & Fittings	8,641	1,586	7,055	6,244	965	5,279
HERA House	34,708	5,110	29,598	39,819	5,110	34,708
Motor Vehicles	101,244	35,671	65,573	130,138	28,894	101,244
Office Equipment	85,908	27,207	58,699	80,838	30,726	50,112
Training Equipment	42,525	5,357	37,168	47,971	5,446	42,525
	<u>366,735</u>	<u>106,450</u>	<u>260,285</u>	<u>429,201</u>	<u>102,525</u>	<u>326,676</u>

**NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED****Notes to the Financial Statements  
For the Year Ended 30 June 2019****9. FINANCIAL INSTRUMENTS**

The table below shows the carrying amounts of the Society's financial assets and financial liabilities.

**1. Classification of financial instruments**

	Financial Assets Loans and receivables	Financial liabilities Amortised cost
<b>30 June 2019</b>	\$	\$
Cash and cash equivalents	244,488	-
Receivables	334,057	-
Payables	-	61,257
	<u>578,545</u>	<u>61,257</u>

**30 June 2018**

Cash and cash equivalents	257,091	-
Receivables	395,400	-
Payables	-	67,676
	<u>652,491</u>	<u>67,676</u>

**10. PAYABLES**

	2019 \$	2018 \$
Exchange transactions		
Accounts Payable	61,257	67,676
	<u>61,257</u>	<u>67,676</u>

**Non-Exchange transactions**

Income received in advance	330	61,586
GST payable	34,058	14,153
	<u>34,388</u>	<u>75,739</u>

**11. REVENUE****Revenue from non-exchange transactions**

	2019 \$	2018 \$
Steel & Welding Levies	2,065,858	1,883,508
Government research funding from MBIE - AGGAT	-	253,060
Grants from HEERF	27,315	92,500
	<u>2,093,173</u>	<u>2,229,068</u>

**Revenue from exchange transactions**

Membership Subscriptions	173,972	166,971
Other income	4,563	8,977
Consulting & Industry Projects	348,088	586,965
Services to third parties	18,219	29,759
Publication	21,521	45,838
Welding Modules	292	3,214
Rent	126,490	110,347
Seminar & Courses	326,346	201,913
Administration and Building management fees from HEERF	-	16,000
	<u>1,019,491</u>	<u>1,169,984</u>



NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

Notes to the Financial Statements  
For the Year Ended 30 June 2019

12. CAPITAL COMMITMENTS

There are no capital commitments at the reporting date. (2018: Nil).

13. CONTINGENT ASSETS AND LIABILITIES

There are no contingent assets or liabilities at the reporting date. (2018: Nil).

14. EVENTS AFTER THE REPORTING DATE

The Executive Committee is not aware of any other matters or circumstances since the end of the reporting period, not otherwise dealt with in these financial statements that have significantly or may significantly affect the operations of the Society (2018: Nil).

15. OPERATING LEASE COMMITMENTS

The Society has entered into contractual agreement for building lease with the outstanding commitments as follows:

Future minimum rentals payable under non-cancellable operating leases are as follows:

	2019	2018
	\$	\$
Within one year	305,943	276,220
After one year but not more than five years	1,142,233	1,104,880
More than five years	414,330	276,220
	<u>1,862,506</u>	<u>1,657,320</u>

16. INCOME TAX EXPENSE

HERA is a research society established mainly to promote our encourage scientific or industrial research and it has applied the income tax exemption in section CW 49 of the Income Tax Act. The tax exemption treats all income as exempt and it applies where the association is approved by the Royal Society of New Zealand and where none of its funds are used or available to be used for the private pecuniary profit of a member, proprietor, shareholder or associate. The New Zealand Inland Revenue has approved HERA's status under section CW 49 of the Act. HERA has also received an approval from the Royal Society of New Zealand on 2 October 2018 confirming that HERA meets the criteria required to promote/encourage scientific or industrial research under section CW49 of the Income Tax Act 2007.

17. GOING CONCERN

These financial statements have been prepared on a going concern basis. The Executive Committee believes that the entity will be able to meet its financial and regulatory obligations for the foreseeable future and that the going concern assumption adopted in the preparation of these financial statements is appropriate.







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