HERA
innovation in metals

Annual Report 2018

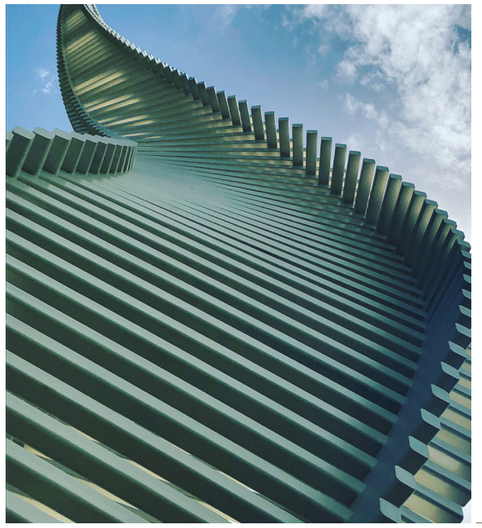
Disrupt or be disrupted

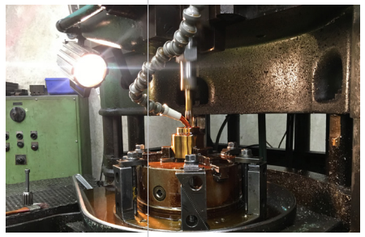
Kia ora, Welcome

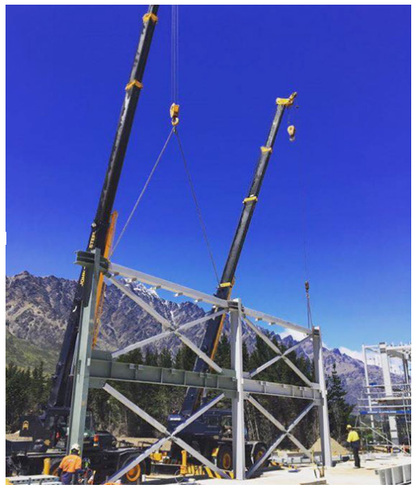
Contents

Cover:

Our members Aimecs Engineering Ltd working on a 3.5m pipeline project for their clients McConnell Dowell and Watercare. Here they used semi automated programable orbital welding technology to allow fast and consistent high quality pipe welding without rotating the pipe - the first of its type in Australasia! Innovation and proposing out of the box solutions to customers is always key!







Steel builds our communities

Grayson Engineering - Jacobs Ladder sculpture on display at Gibbs Farm | **CW Beams** - the B-Hive stairs at Smales Farm consisting of 35 tonne of steel | **Farra Engineering** - with their 'Sky Riser' self-lifting scaffold system which is being erected on the tower in Auckland's North Shore. Two stories high it encompasses four sides of the building to allow worker's to do refurbishments safely while protecting the public simultaneously | **BDS Vircon** - Commercial Bay Tower in construction | **BOP Gear Cutter -** machinery in action | **Longveld** - their high powered water jet cutter on the floor | **John Jones Steel** - the Wakatipu High School dual crane wall lift | **Modern Construction** - demonstrating quality assurance | **IMG** - providing the underpinning steelwork to support the heritage listed Chief Post Office

Serving the New Zealand metals-based industry

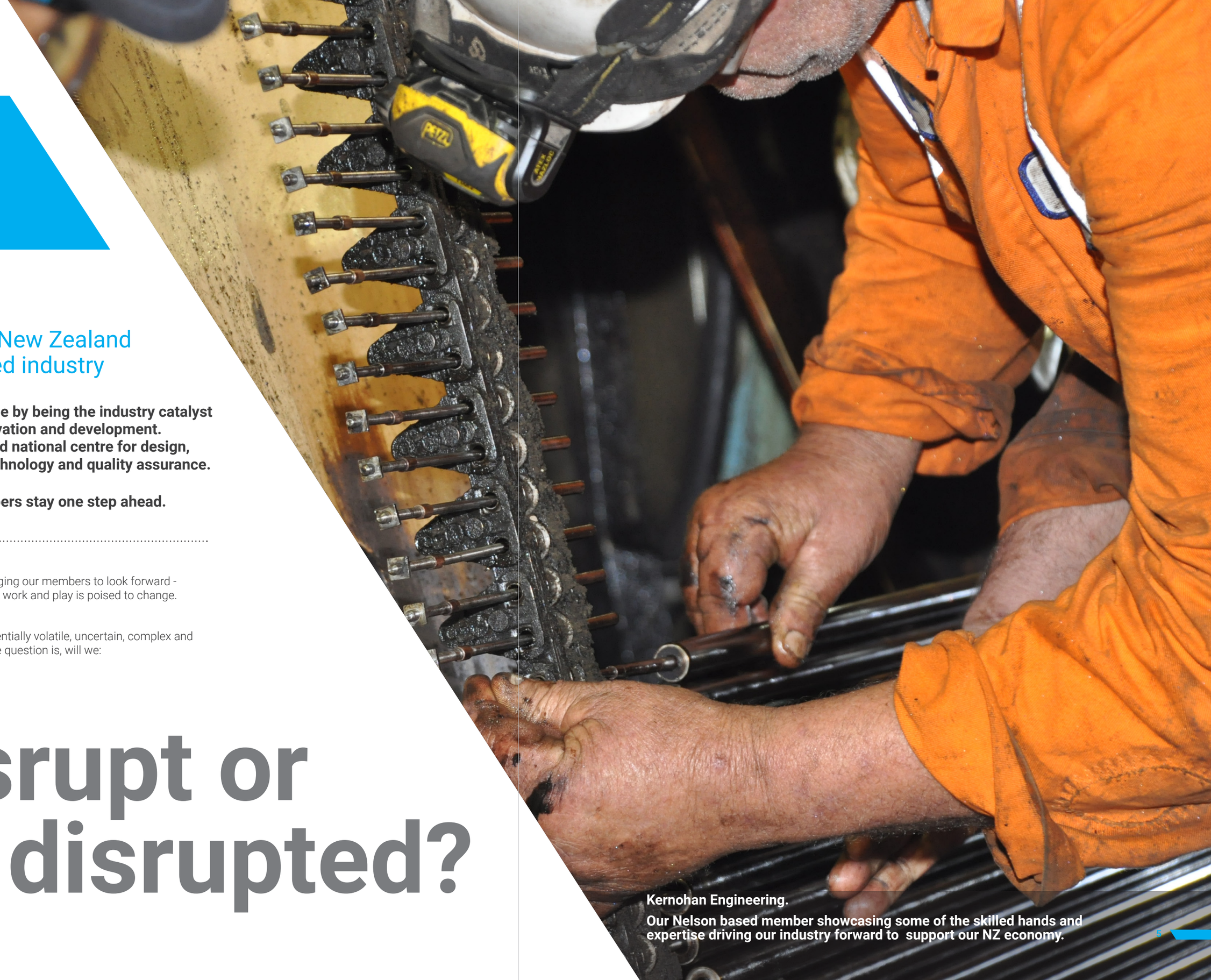
HERA creates value by being the industry catalyst for research, innovation and development. Delivering a trusted national centre for design, manufacturing technology and quality assurance.

Helping our members stay one step ahead.

That's why we're challenging our members to look forward - because the way we live, work and play is poised to change. Dramatically.

We must navigate a potentially volatile, uncertain, complex and ambiguous world. So the question is, will we:

Disrupt or be disrupted?



Kernohan Engineering.

Our Nelson based member showcasing some of the skilled hands and expertise driving our industry forward to support our NZ economy.

Chair | General Manager Page and Macrae Ltd - Mike Lehan

CEO | Dr Troy Coyle

> "We're shifting to better support our industry to transform and innovate for the next 40 years!

Report from our Chair & CEO

HERA turned 40 in FY18.

It was an opportunity to reflect on the successful delivery of our Founder's vision for a thriving metals engineering sector for New Zealand.

It was also a time for change for us - to ensure we're ready to assist our members to transform and thrive for the next 40 years!

FY18 was again a strong year for metals based engineering. Although HERA levy income was slightly down from FY17 income, most of our members reported strong order books and several high profile steel construction projects were established.

Supporting and celebrating innovation

As enthusiastic research partners - innovation is at the core of everything we do. However, a hard lesson for HERA to learn in FY17 was that our industry is not particularly well prepared for transformation and innovation adoption.

Acknowledging we wouldn't be able to support our industry to transform unless members had the basic skills and processes in place to do so, we established our Innovation READY, SET, GO program. The first Innovation READY module commenced in June 2018, with participants coming from: Composite Floors and Decks, Crown Sheetmetal, Genesis Energy, Kernohan Engineering, Longveld, Lowes Industries, MB Century, NDA Group, Page & Macrae Engineering, Steel and Tube and Steltech. We'll continue with this cohort through Innovation SET and GO, as well as welcome a new Innovation READY cohort in FY19.

We also released HERA Report R4-150:2017 "The seismic performance of structural steel buildings in the 2016 Kaikoura Earthquake". This research confirmed that steel construction in the Kaikoura earthquake performed equally to that positively documented in the Royal Commission Reports for the Christchurch earthquakes. Structural steel buildings in the Wellington region performed well during the earthquake, with one notable exception – the Queensgate cinema and car parking complex. Additionally, four examples of damage to steel buildings were noted, one being the vulnerability of gusset plate connections to a sway mode of behaviour. Overall, our research indicated there are no deficiencies in New Zealand seismic design practice for steel building structures at this time.

Delivering value by solving industry problems

We continue to work closely with organisations, both nationally and abroad. In 2018, we re-instated strategic reviews with SCNZ and ASI, as well as Weld Australia.

We share our ideas and knowledge to ensure our industry is well supported. For example, in early 2018, our Welding Centre used internationally developed measures for welding support to determine the value they're delivering to members. Using this method (developed by sister organisations in the UK and Australia), we calculated we're providing a 24:1 return on investment! We'll continue to monitor our performance using the FY18 data as the baseline. We'll also develop suitable measures for our other divisions to ensure we are continuing to add value.

In early 2018, we also introduced a new process for prioritising R&D projects. Allowing our members to propose projects. These will be considered by research panels made of industry representatives using transparent rating criteria. This ensures our levy funding is allocated to projects that will maximise research quality, member impact and strategy alignment.

We've continued to build strong industry links for commercially focused R&D - particularly in steel construction. Industry obviously has confidence in our ability to be independent and deliver technical excellence.

Developing, meeting and maintaining high industry standards

In December 2017, after six years of hard work and based on our core R&D, AS/NZS 2327:2017 "Composite structures- composite steel-concrete construction in buildings" was adopted. This standard sets out minimum requirements for the design, detailing and construction of composite steel-concrete members (beams, columns, slabs, joints) in buildings.

HERA Certifications (a wholly owned subsidiary of HERA) has continued to deliver certification against AS/NZS 5131 "Structural steelwork – fabrication and erection" as part of the Steel Fabrication Certification (SFC) program. Our Welding Centre has also assisted companies to build their expertise and capabilities to meet these stringent requirements & industry need.

Financial performance

There was a drop in revenue from FY18 (down from $3.7 million to $3.4 million) due to the completion of AGGAT funding from Government, and reduced levy income. This was met with a reduction in expenditure (down from $3.6 million to $3.5 million), leading to a net position of -$18K surplus.

In FY19, our industry panels recommended that we support some key R&D projects that were well overdue for attention. For this reason, we currently anticipate delivering another slight deficit. However, we're optimistic that the welding levy increase will be approved and enable us to be in a stronger financial position.

Looking forward, the construction industry pipeline is looking strong until 2021. We do have concerns that there may be increasing use of imported pre-fabricated products. Our levy currently doesn't apply to these and this is something we need to address.

Our people

The key staff change for us has been the retirement of long-time Director, Wolfgang Scholz.

We also saw the departure of our Resource Officer, Gillian Casidy who was replaced by our new Information Services Officer, Musarrat Begum. And, two of our Research Engineers, Dr Lei Chan and Dr Haiam Abbas from our AGGAT project.

We're also pleased to announce that our Research Engineer, Holger Heinzel, was able to join the elite circle of International Institute of Welding accredited Welding Engineers in FY18.

CEO outlook

Many people have asked what change in strategy I'll bring to the role. Having been on the HERA Executive for some time, I've actually been contributing to it for some time, so don't anticipate a dramatic change! However, there are five key opportunities I'd like to focus and bring new energy to:

1. **Defining our value:** we have a very strong reputation, but I'm concerned by feedback that not many of our members can articulate the reasons or value of being our member. Sometimes, it feels like it is just because 'Wolfgang was a great bloke.' While honouring that is indeed true, it's also a precarious position for us to be in.

   So, a key focus will be identifying what it is that we really should be delivering to members and then making sure we keep that focus.

2. **Creating relevance:** we need to bring HERA into a more modern context. Refreshes in our reporting structure, website and newsletter already reflect this. But, we also need to create deeper relationships with our members and our own team. This means understanding what makes us all tick, and listening to your problems before developing plans to solve them based on assumption.

3. **Creating focus** - there's been a lot of confusion about who does what. That's why HERA needs to focus on innovation and R&D, and limit our direct advocacy to that scope. That doesn't mean we can't stir the pot - just that we need to make sure we're acting as an industry, not separate organisations. We can do this by empowering our sister organisations such as SCNZ and Metals NZ by being the provider of high quality evidence base. Allowing us to best utilise the skills, remit and position of each organisation.

4. **Creating a high performance team:** we're very lucky to be HERA and not a separate ASI and Weld Australia, and we need to leverage that good fortune by making sure all divisions are working more closely together to build a high performance team. We also have some capability gaps that we need to fill, as well as several staff preparing for retirement. We need the right team with the right skills to support our members.

5. **Catalysing vs. care-taking:** a recent learning has been that we shouldn't be driving industry innovation, but rather assisting industry to get in the driving seat itself. With our AGGAT program we over-stepped that mark, and invested too much in an activity that didn't have strong member engagement.

   Moving forward we'll be focused on assisting members to develop innovation and R&D capabilities and processes for themselves. We can engage where we have expertise, and may build expertise if there is industry demand to do so. However, we won't be developing a capability without first having industry support… and we certainly won't be doing commercialisation ourselves or pushing technologies onto members that aren't positioned to benefit from the opportunity.

I'd like to thank all of our members and stakeholders for their support in 2018. It's also the time to thank our founders for creating the vision that allowed us to support what has now become a thriving steel engineering industry in New Zealand.

We believe that HERA now needs to go through a review and shift to better support our industry to transform and innovate for the next 40 years. Keep and eye out for some of this shift occurring in FY19. And of course, we'll be looking for new ways to engage you in that process.

Mike Lehan
Chairman

Troy Coyle
CEO

Our Executive Board

| 1 | **Deputy Chair** Matthew Kidson, Director Kernohan Engineering | 2 | Craig Stevenson, Technical Director - Buildings Aurecon | 3 | Darren O'Riley, Manager SCNZ | 4 | Dave Anderson, General Manager John Jones Steel | 5 | David Moore, Managing Director Grayson Engineering Ltd | 6 | Dieter Adams, Chief Executive NZ Manufacturers & Exporters Association | 7 | Jennifer Hart, Alliance Director (Acting) Auckland Motorways & Principal and Technical Director Port & Coastal Beca Ltd | 8 | **HEERF Chairman** Noel Davies, Joint Managing Director Hydraulink Fluid Connectors | 9 | Pat Dwyer, Product Manager NZ Steel replaced by Matthew Black, Head of Product & Innovation NZ Steel in June 2018 | 10 | Paul Bryant, Area Manager Mt Maunganui Steel & Tube | 11 | Raed El Sarraf, Corrosion & Asset Integrity Consultant Opus International Consultants | 12 | Tho mas Neitzert, Professor Emeritus Auckland University of Technology

WELCOMED OUR FIRST FEMALE CEO

wide-spread reach

30K OF OUR INFO RESOURCES have been uploaded to the cloud & soon will be available to our members

WE CELEBRATED 40 YEARS

Serving the metals industry

Launched Innovation READY

We found that only 1/6th OF OUR members are highly engaged in helping us make POSITIVE CHANGE

We published the first joint NZ & Australian composite design standard for multi-storey buildings

catalyst for change

We held 34 courses & seminars at HERA HOUSE

A year marked with positive change and new directions.

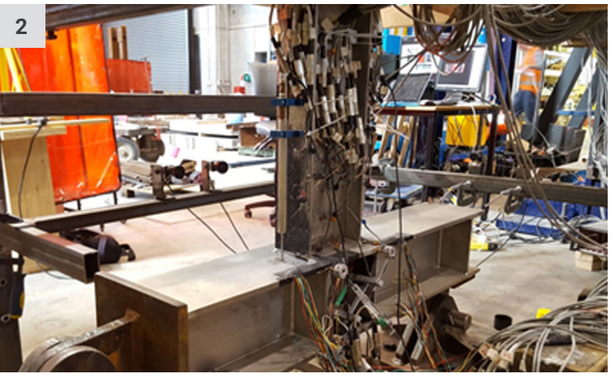
At HERA one of our values is progress.

It charges us to be passionate learners who accept the challenge to think differently so that we can help our industry move forward.

That's why we're celebrating the small wins we're making. Because they're all steps towards that progress that we're so motivated to achieve!

Success in FY18

We're pioneers in new thinking



| 1 & 2 | University of Auckland seismic testing for welded connections | 3 | Professor Dr Kenneth Husted, our key contact for the business research program.

At HERA, we help our members solve their problems.

Providing cutting edge knowledge and trusted technical excellence for their innovation and engineering challenges.

Across our division we've been working on a number of research and development projects designed to assist our membership.

Proving NZ fabricated steel is the safest building material choice for New Zealand's seismic environment.

Post-Kaikoura earthquake, little was mentioned about systemic failures in steel construction.

While this gave confidence that our structures performed well, we had to make sure. Taking an opportunity to learn if there could be any potential issues now, and in the future by commissioning research to pinpoint any weaknesses.

The research outcomes described in **HERA Report R4-150: 2017** now confirm that there were no serious problems. Follow up on recommendations made as part of the research will also further improve steel construction performance in severe earthquake events.

However, as an industry we can't rest on our laurels. We have to address the pinpointed areas for improvement – including:

- educating and learning about best design practice
- avoiding the use of details with known poor seismic performance
- further research to create a procedure to deal with designing gusset plate connections in seismic load resting braced frames.

Research & development

Our Welding Centre R&D

Helping our members succeed in our local markets by evaluating and optimising performance of welded connections under low cycle seismic fatigue.

We believe that better understanding the behaviour of stainless and carbon steel connections under severe seismic load is a growing industry necessity.

The three year research program funded by the HERA foundation assesses their seismic performance for both optimisation of weld details to reduce fabrication costs and maintaining a high level of performance under seismic load.

Originally initiated by the structural steel industry, we're now working in cooperation with the University of Auckland (UoA), University of Michigan, NZSSDA, Stainless Structurals Asia Pte Ltd, Vulcan Stainless, Grayson Engineering, D&H Steel and Rivet Engineering to bring together an expert team.

The evaluation procedure itself is now completed, and consists of six large-scale tests on welded stainless and structural steel connections, using a sophisticated mechanical set up and extensive instrumentation. It's our hope that the findings will enable architects and engineers to plan and design with stainless steel as freely as they do with carbon steel.

Helping to ensure steel continues to be a cost competitive and seismically safe material choice for the construction industry under NZS 3404.1:2009.

We've now completed research into the fabrication and inspection requirements of NZS 3404.1:2009 for welding and cutting in the k-area of hot rolled sections to AS/NZS 3679. This was done in collaboration with OneSteel who sponsored materials for testing.

The outcome has led to current Non-Destructive Testing requirements to be relaxed - allowing substantial cost savings in fabrication. And, we're proud to confirm that corresponding changes have already been made to AS/NZS 5131 to reflect these research results.

In collaboration with Professor Hobbacher, we've also developed recommendations for brittle fracture guidelines to NZS 3404.1 under static and seismic load - particularly for low temperature applications.

HERA's tips for Innovation Managers

- Brainstorm to identify potential disruptions.
- Keep a watching brief on developments that may lead to disruption. These should include political watching briefs as policy and legislative changes can also be disruptive.
- Include an analysis of the impacts of disruptive technologies in In product development plans/decision-making.
- Note that exploitation of disruptive technologies requires a different approach than the "norm" and may require a completely unfamiliar business model.
- If you're a decision-maker or champion, advocate for staged approaches where initial ventures ("failures"??) are considered learnings and managed in a way that there is still resourcing to apply those learnings.
- Focus on getting support from your leadership team to act nimbly and promptly to disruptive innovation (threats or opportunities).

Our Industry Development R&D

Innovation is at the core of everything we do. But we also understand that for many of our members it can be hard - especially when it mostly ends in failure.

To support a shift toward an innovative mindset within our metals engineering industry, we recognise we need to model the change. We launched a business research program to address this gap.

The program leverages expertise from the University of Auckland Business School's research team who work closely with our members to assist them with potential commercial opportunities they've identified. Whether it be through product, process or service innovation - the business program will be focused on providing the tools necessary to understand a customers problem and create a minimum viable product so they can get to market faster and more efficiently.

Research for industry, from industry - panel projects

A future focus ensures we're doing the right research now, so that our industry is well prepared for what is ahead.

Our Structural Systems team is championing research projects to address industry challenges.

Projects include:

1. **Development of steel and steel-concrete composite standards for buildings and bridges**

   We're working to ensuring that the current suite of NZS and AS/NZS standards are up to date with the latest research findings, so that steel is the preferred solution to designers when compared to other materials.

2. **Guidance for imported steel structures that have been fabricated overseas**

   A levy-funded initiative commenced in 2015 where HERA and SCNZ are working collaboratively to develop a document that provides guidance for imported fabricated steelwork to level the playing field with domestic suppliers.

   This also includes contributions from Consultants Alistair Fussell, Dr Won-Hee Kang of Western Sydney University and Professor Brian Uy of the University of Sydney.

3. **Minimum degree of shear connection rules for long-span composite beams**

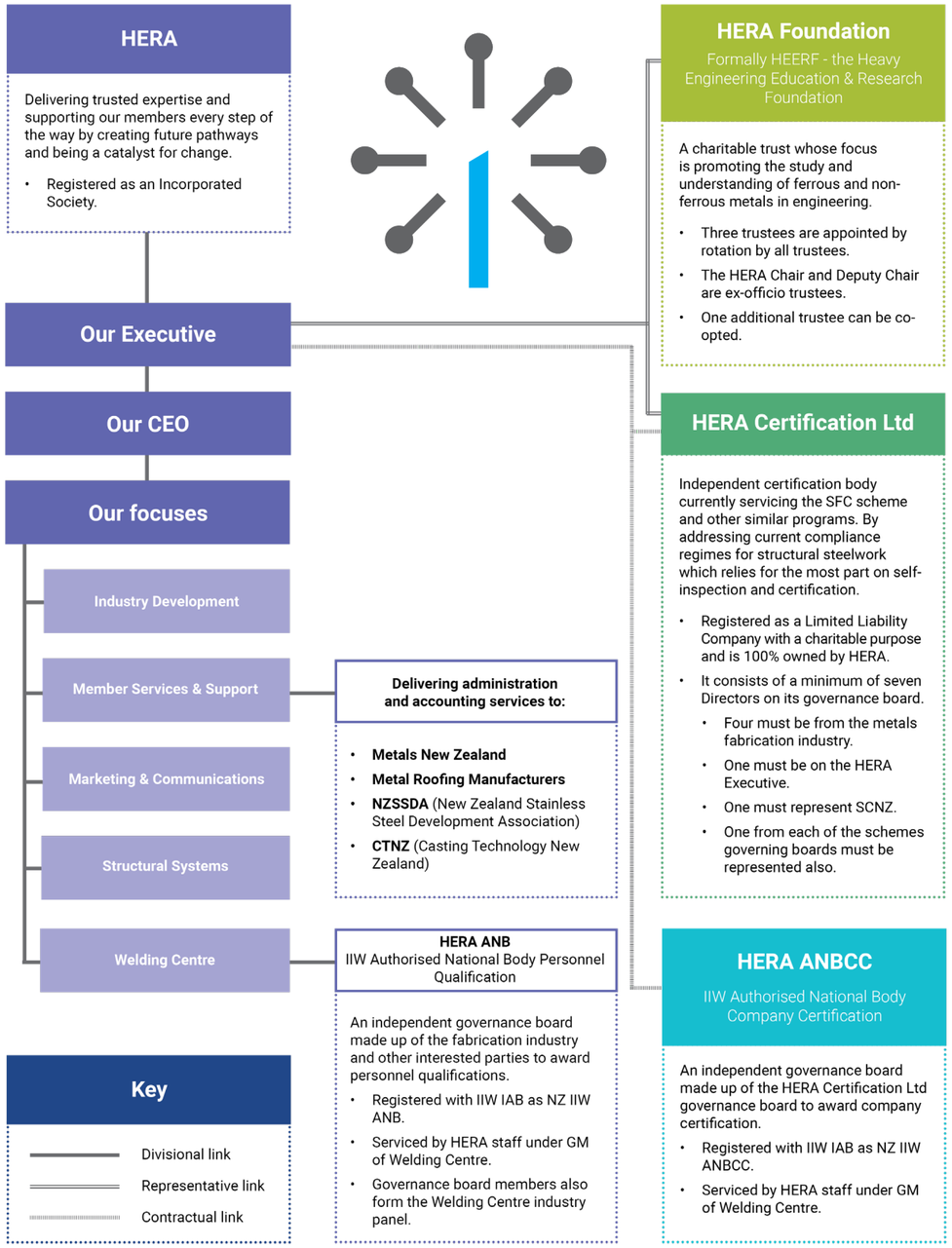
   We continue this 2015 levy-funded project. Aiming to utilise our finite element capability to conduct parametric studies to develop improved minimum of degree of shear connection rules more suited to NZ practice and, that are less restrictive.

4. **Design tools for multi-storey buildings**

   Composite construction is popular in New Zealand, and has largely accounted for the dominance of steel frames in multi-storey buildings. However, the amount of design effort required to properly design these members is creating a barrier for their uptake.

   Design tools are currently being developed in alignment to the new design standard AS/NZS 2327 to address this.

The Welding Centre panel meeting



Our unique structure that allows us to deliver value

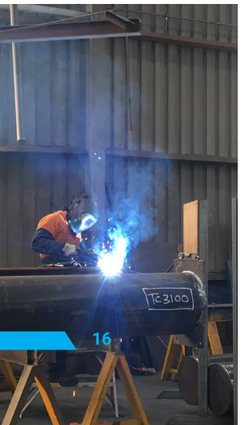
An industry contributing significantly to our New Zealand economy.

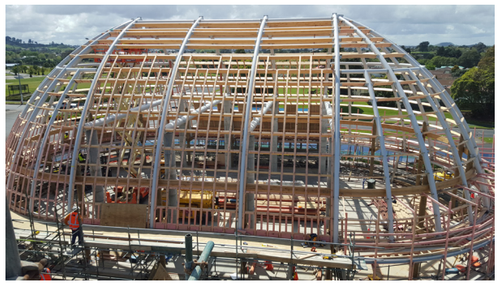
Our New Zealand steel fabricators can make almost everything!

Creating infrastructure, manufactured items and services that form the backbone of our communities.

According to the "Manufacturing Report 2018 Beyond commodities: Manufacturing into the future," our metals manufacturing sector employs more than 30% more workers than the wood and paper sector. And, our engagement in R&D is higher than the national average.

Dixon Manufacturing - the Queenstown 'Swing with Swings' | **PFS Engineering** - working on the OJI Fibre Solutions project to complete the structural, mechanical and piping installation of the new EV3 plant on site at Kawerau. This included all the piping tie in's to the existing plant | **Jensen Steel** - welding in the workshop | **John Jones Steel** - the dual crane wall lift for the Wakatipu High School project | **NDA Group** - large scale works in their stainless steel workshop | **Zeal Steel** - Lawrie and John in front of scrap metal from the hull of a ship which will be converted in to new products | **Markplan Consulting** - an example of a traditional Samoan falé meeting house they engineered | **RSL Steel** - the OFC Stadium commercial project in Mt Wellington Auckland | **Mercury Energy** - visit on site to view their onsite drilling rig 32 with MBIE, MB Century and others on the NZGA board | **BECA Group / HERA** - works done on the Duo Ophir Rocher project in Singapore to assist with the ballroom's tuned mass damper analysis and testing.





Report from our HERA Foundation Chair

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

> "We're pro-actively investing in the future of our industry, and dedicated to it's long term success.

HERA's charitable trust has received a trust deed makeover.

All in order to adjust to the amended Incorporated Societies Act. This also saw us rename ourselves the HERA Foundation.

Rest assured, there is one thing that hasn't changed - and that is our quest to be an independent organisation promoting the study and understanding of ferrous and non-ferrous metals in engineering.

Our income

Our total income was $278k – obtained through HERA House earnings, donations and interest on an endowment fund offered in support of our key objectives.

About 60% of these funds were transferred back to industry via a grant to HERA to run a number of projects and award sponsorships. The remainder goes back into administering our assets and paying back the loan for the recent HERA House refurbishment.

Our grants

Continuing our efforts to drive research and industry development, our grant to HERA was $92,500 for FY2017/18. Three HERA research programs benefited from this.

In steel construction's fire engineering program - HERA Foundation scholarship recipient Kingsley Ukanwa completed his PhD thesis.

Working with Professor Charles Clifton from the University of Auckland (UoA), he explored ways to increase the structural performance of concrete filled steel columns under fire applications. The study produced outstanding results and papers and will flow directly into our fire engineering design guidance.

In the seismic research area - UoA, PhD student Hafez Taheri continues his research for his second year on the performance of welded connections made from laser welded stainless steel (SS) sections and alternative welded carbon steel connections.

He completed a good part of the large-scale tests with very promising results. Hoped outcomes will support the competent use of SS in seismic structural applications but also more cost-effective ways of making welded carbon steel connections.

In the AGGAT renewable energy program - UoA PhD student Shoulong Dong made very good progress with his Expert Design Tool. It'll simplify design tasks within Organic Rankine Cycle (ORC) plants and help assess prospective heat resources for ORC application.

Despite the AGGAT program now being closed, we're committed to continuing our support for Shoulong to complete his studies as originally agreed.

Supporting professional development

Our visiting scholar for this financial year was Professor Pingsha Dong. He runs the Welded Structures Laboratory at the University of Michigan. Pingsha Dong, and is one of the world's leading experts on weld design issues.

He presented a two-part seminar series on the design of welded connections for marine, and also seismic application to over 200 professionals across New Zealand.

To promote metals engineering amongst undergraduate engineers, we also supported final year student projects at the UoA and Auckland University of Technology. Providing awards for the best projects involving metals.

Acknowledging success in our industry

At last year's Metals Industry Conference, we supported HERA in awarding the Keith Smith Award for Outstanding Service to the Industry. It went to former HERA Executive member, SCNZ Chairman and Director of D&H Steel Construction Mike Sullivan.

And as icing on the cake - Mike donated his award money back to us to pay it forward. Thank you Mike!

We continue to recognise specialist excellence through our commitment to building a strong technical culture within our industry. This year sponsoring the Engineers NZ Young Engineers Forum and their new student engineers program.

This was a great opportunity for HERA General Manager Industry Development Dr Boaz Habib to bend the ears of over 40 young engineers and students on our industry challenges and need for fresh innovative thinking from them once they enter the profession.

Our future outlook

We're pro-actively investing in the future of our industry and dedicated to supporting its long-term success. We certainly look 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

Fostering career pathways for our future engineers to help address the skills gap

Education

Out on the ground we continue to hear from our members about the workforce shortages they're facing.

Fixing this problem unfortunately won't happen overnight. But, we're doing all we can to help support our industry through this issue by focusing on how we can foster long term sustainability.

One way we're able to do this is by supporting student projects and internships. Not only do their research outcomes address member challenges - but it also gives them an important glimpse into our metals industry with the hopes that they might be inspired to stay!

As seekers of diverse perspectives, we're also working hard to encourage HR innovations within businesses to assist with attracting more people into our workforce - particularly women.

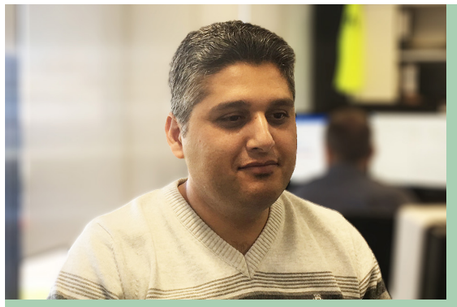
Apply for a scholarship!

www.hera.org.nz/post-graduate-scholarship/apply-scholarship

Meet Audsley Jones

If you've been to Christchurch recently, chances are you've seen some form of diagonal steel bracing in one or more of the city's buildings. These reinforcements are called Buckling Restraint Braces (BRBs) and they're now used in approximately 80% of new builds in the city.

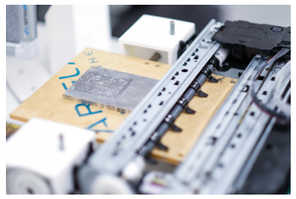
These braces are the main focus of Audsley's PhD research project into earthquake resilience of steel structures.

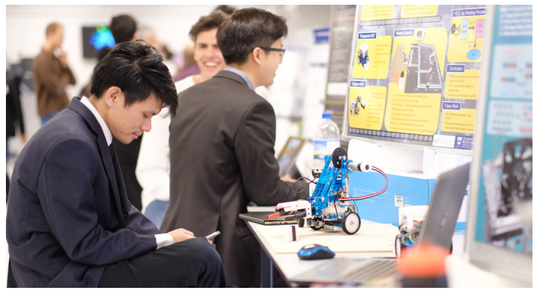


Meet Hafez Taheri

He's currently focused on discovering solutions to address deficiencies in welded connections particularly in low fatigue regions as part of his PhD.

Evaluating the performance of welded moment-resisting connections in seismic zones to help better understand its behaviour. All so we can work towards safer and more cost-effective welded connections in steel buildings.





Final year student project awards at Auckland University's Engineering Faculty, which we supported.

Meet Kingsley Ukanwa

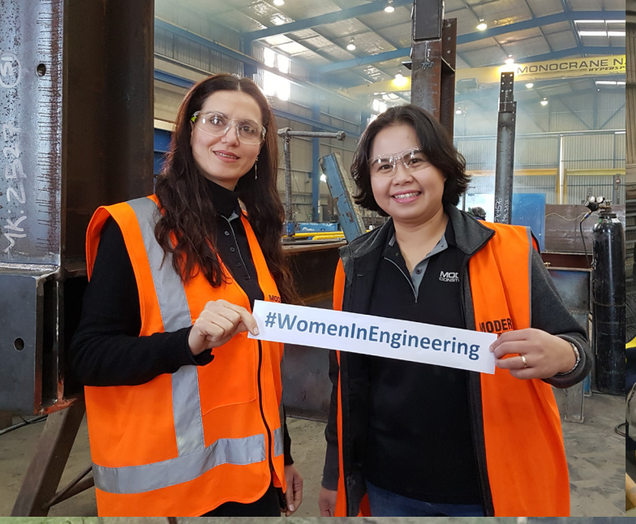
He was charged with the task of understanding composite CFST (concrete filled steel tubular) columns under severe fire conditions, and the development of a new design procedure for their use in multi-storey buildings.

Now completed, it'll allow our members to reduce their construction costs, and provide new design rules to confidently use in their projects.

Meet Risa Hoshi

Risa came to us to delve into reviewing policies and regulations for the geothermal sector. In particular referring to NZS2403, RMA1991 and other NZ regulation around the cooperative relationship of government, operator and resident stakeholders in this space.

This work has helped us understand how policy and regulations can affect manufacturing practises.



Women in engineering

Six tips to attract and retain talented females

Get back to the basics & broaden the talent pool by making our industry more attractive to females.

1. **Language drives communication and communication drives culture.** Gendered wording signals who belongs... and who doesn't.
2. **Facilities can be inviting or offputting.** Make sure your environment suits all. Have suitable bathrooms, PPE that fits & get rid of calendars objectifying women!
3. **Show the career path.** Invest in female leaders so they can become role models.
4. **Accept diverse leadership styles.** It's worth remembering tone of voice or stature don't indicate leadership success - don't let unconscious bias creep in.
5. **Engaging pleasantries.** Shake everyones hand, make eye contact & take an interest in all. Proactive help change the culture where everyone is accepted.
6. **Don't shoot the messenger. Encourage the courier.** Create a culture where women don't feel uncomfortable to give true feedback. It's hard for them to speak up as it is.

Our #WomenInEngineering showcased as part of our International Women's Day campaign.

Modern Construction - QS Estimator & QA Assistant, Reem Soliman and Senior Structural Steel Detailer, Mae Rose Billaines **| Longveld** - Managing Director, Pam Roa **| WSP Opus** - Work Group Manager Bridges & Structures, Natalie Uran **| McConnell Dowell** - Business Development Manager, Grace Schaefer **| New Zealand Steel -** Product Launch Manager Roofing & Cladding, Katrin Schüenemann **| Pacific Steel** - Market Development and Key Account Manager, Laura Coffey **| Steltech** - Customer Services Manager, Jacqui Brady **| Fletcher Building** - ANZ Group Employment Relations Manager, Charlotte Hatlauf

Technical excellence

Helping our members develop the right skills for their needs

Key statistics on our educational offering

200+

professionals attended our technology forums on standards updates

85

people completed our WELDING supervisor & inspector courses

Highlights from the year

Training and diplomas - celebrating success | **Welding updates seminar** - shots from the Auckland series | **NAFEMS** - Nandor Mago in Stockholm to advance his FEA capabilities | **IWE qualified** - Holger Heinzel just returned from his studies in Germany | **STESSA18** - GM Welding Centre Michail Karpenko presenting | **AS/NZS 5131** - fabricator training

We're trusted for our technical expertise.

Leveraging it to run a number of courses, seminars and workshops throughout the year to upskill our workforce.

During FY18 we ran a series of "Welding Standards Update" seminars across New Zealand which were attended by over 140 professionals.

The seminars covered issues around welding and fabrication standards AS/NZS 1554.1:2014 Structural steel welding - Welding of steel structures and AS/NZS 5131:2016 Structural steelwork - Fabrication and erection.

The seminars also included a session on the newly revised welder qualification standards AS/NZS 2980:2018: Qualification of welders for fusion welding of steels and AS/NZS ISO 9606.1:2017 Qualification testing of welders -- Fusion welding Part 1: Steels. Of which both standards are referenced in AS/NZS 5131 as the requirement for qualification of welders.

In cooperation with SCNZ we also offered a training program for the transition of the structural steel fabricators to the new standard AS/NZS 5131:2016 Structural steelwork—Fabrication and erection.

This was a well attended event by over 60 professionals across New Zealand due to it being cited in the Building Code early this year. Support was needed for fabricators faced with a tight timeline to implement the changes - and we were there to do so!

Creating an inhouse team you can rely on

This financial year we were proud to announce that our Research Engineer, Holger Heinzel, became a qualified International Welding Engineer (IWE).

This level of qualification is required by many international standards as a mandatory key piece of a welding fabricator's quality assurance system such as ISO 14371, ISO 3834, EN 1090, and European Pressure Equipment Directive 2014/68/EU. This knowledge will be invaluable to our members.

We believe investing in keeping our team up to date with the latest in technical capability is essential - especially to upskill our next generation of professionals.

Keeping up with the latest advances for our members

General Manager Structural Systems, Stephen Hicks, presented at CCVII for composite construction in steel and concrete. And, his Finite Element Analyst, Nandor Mago headed to the NAFEMS World Congress on simulation process and data management.

Many of our team also attended STESSA18 which we sponsored due to its focus on the latest in seismic applications - a strong research focus for us.

Creating NZ success

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

Case study: R&D for Steel and Tube

We spent 18 months driving R&D focused on getting their new composite slab product, ComFlor SR, market ready. Providing design of the test specimens, management of international laboratories, and evaluation of design values from tests in both normal and fire conditions.

The result?

A new type of floor system to the NZ market that gives confidence to specifiers because its undergone rigorous testing and evaluation. As well as the implementation of SCI, UK evaluated design values into a new version of the market leading ComFlor design software to rapidly speed up use and adoption by designers.

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 National 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.

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

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.

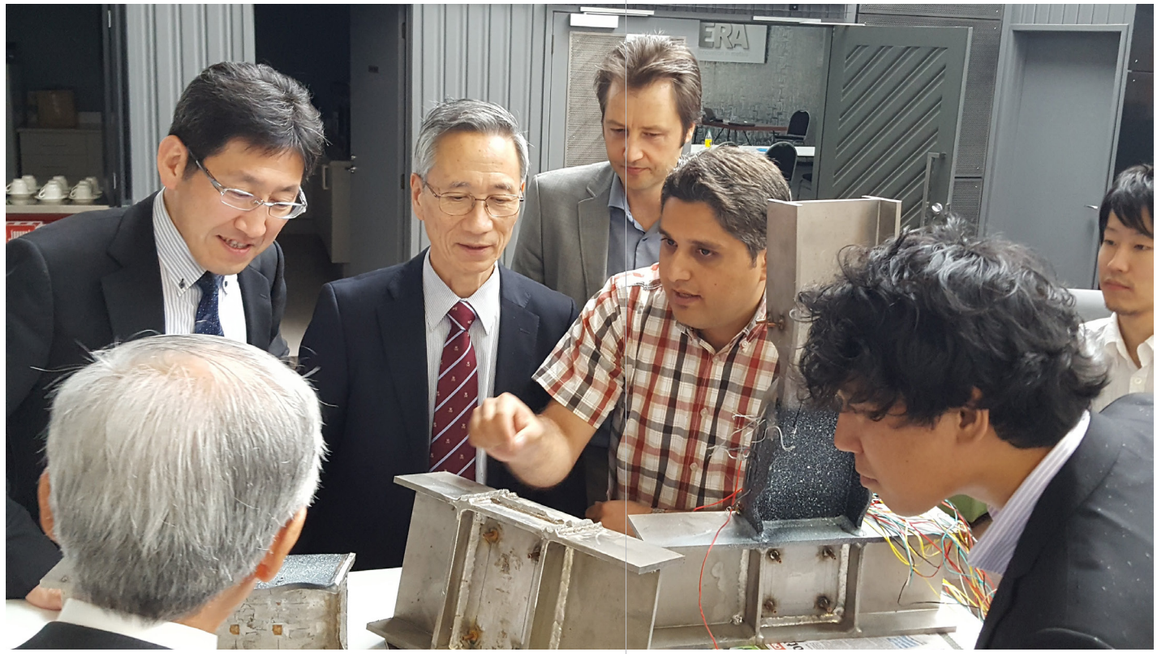
HERA Certifications Ltd Board is in charge of the development SFC Certification Scheme Rules. The Scheme has now been fully aligned with the fabrication requirements of the standard AS/NZS 5131:2016 Structural steelwork—Fabrication and erection. It is a vital standard for the structural steel industry that has been cited on the Building Code.

Over SFC's short four years of operation, we're pleased to share we've successfully been able to certify companies have the appropriate personnel and quality management systems in place. With around 80% of New Zealand's structural steel fabricators now certified.

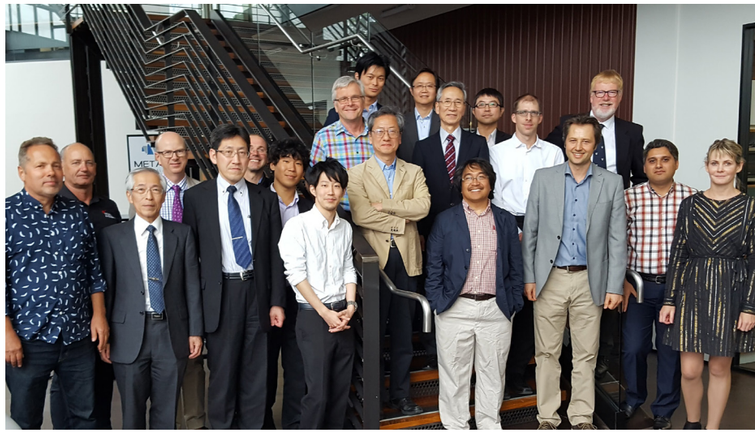
Further work involves introduction of the Site Erector and Protective Coatings Applicator scheme and certification of a number of smaller fabrication businesses to SFC CC2.

Michail Karpenko
Manager

> "80% of NZ's structural steel fabricators are now certified.



X 1895 draft agenda | A meeting of the International Institute of Welding IIW Commission X which was attended by ten experts from NZ & Japan who presented papers addressing fracture mechanics & seismic issues.



Quality

Developing, meeting and maintaining high industry standards

Hidden value now transparent

124 survey participants across a cross section of users told us...

FOR EVERY levy dollar, our Welding Centre delivers a return of: $24

Of those who responded:

42% were managers

16% were on the shop floor

42% were professional engineers or technical

ONLY 14% Of respondents weren't members. And of them, 63% didn't know they were entitled to free Associate membership as a welding consumable user as part of the welding levy

TECHNOLOGY TRANSFER

82% use our free technical advice for work

Across NZWCs strategic focuses

85% use or plan to use our services

EDUCATION

QUALIFICATION

R & D

94% use welding related standards

52% use, or plan to use our SFC technical support

CERTIFICATION

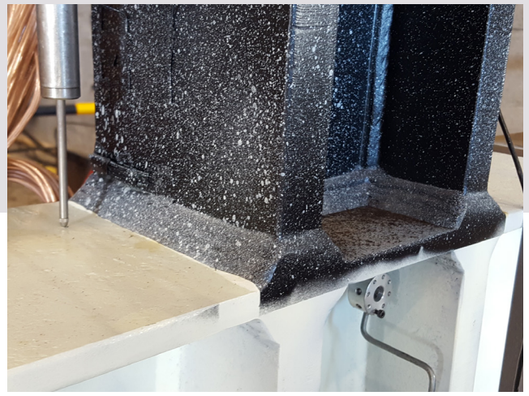
VERIFICATION

Steel is easier and more versatile to work with than any other building material.

It's also a low risk building solution - but the overall safety of large steel structures depends on the safe and reliable connection of its individual components.

Welding is the process of choice for a great many of these connections, providing strong and reliable joints.

A weld repair rate higher than expected is likely to lead to delays, increase the overall project costs and may be deleterious to the structural integrity of the welded product itself.



The cost of quality is dependent on various factors which aren't easily quantifiable. Reliable quality and productivity data is a great asset that must be used to:

- optimise efficiency of the fabrication process,
- identify the key impact factors affecting quality,
- rationalise inspection requirements, and
- better understand the relationship between the costs of the quality management effort and its effect.

Our Quality Program establishes such a system by continuously monitoring the quality of fabricated steelwork, optimising inspection requirements and managing compliance risks based on big data analysis and the Welding 4.0 concept.

The first part of the program is focused at identifying the rate of weld repairs (also referred to as the non-compliance rate or defect rate) in structural steel projects. And, to establish key parameters influencing the weld quality levels.

Data was collected from 37 completed structural steelwork projects and 12,000 welds to inform this work. Our work has been submitted for publication in a peer-reviewed international journal.

Home without harm. Everyone. Everyday.

It's a great mantra that our member McConnell Dowell hangs their hat on. And it's a type of thinking that we want to inspire all our members to adopt.

At HERA integrity is one of our core values. We know we're responsible for our actions. So when it comes to health, safety and environment we realised the best way we can do that, is leading by example.

Since January, we've started delivering on our promises in this space. Kick starting internal H,S+E audits, inviting experts in to educate our team and acknowledging our H,S+E meetings are important to our workplace culture.

We've also made a commitment to shine the light on different H,S+E topics externally.

From safety culture to PPE, safe driving, mens health, recycling, SOPs and more - we're raising awareness and promoting the message that H,S+E is vital for our industry, it's people and environment.

H&S + Environment

Optimech International Ltd.

Our Auckland based member carrying out rope access inspection of a structural reinforcement survey using Proceq Profometer cover-meter technology and core drilling samples.

Facilitating connection and collaboration within our metals industry

We see ourselves as the thought leaders for our metals industry.

Where we openly share our ideas and knowledge - but also value the contributions of others.

But, we recognised we had to first create an environment where our industry felt confident to become more collaborative.

So how have we done it?

We launched our new website!

We built a home that not only reflects our refreshed branding that launched in FY17, but makes it easier for our members to connect to educational content, latest news, and most importantly - our people.

Every week we release at least two new content pieces here. Connecting people to our research and development, expertise and the great work our members are doing out there.

We've also started being more transparent in our communication. Telling you how we feel about issues, how we can help solve them, and giving you clear calls to action.

The best part? It gives us a platform to work with other thought leaders. Giving rise to diverse perspectives on topics that truly matter to our metals industry.

We embraced social media

We've ramped up our presence on our mainstays Twitter & LinkedIn, Facebook & YouTube. Instagram is to come in FY19!

This gives us a great way to share our content, and keep things short and simple for our time poor industry. It also has created a network reach we couldn't have anticipated.

Yesterday we spoke to our members. Today we speak to the world and the media influences who never heard us before! Allowing us to advocate more for industry.

We welcomed third party endorsement

As we've gotten better at sharing our thinking and innovations - people have started hearing us.

We've since had our content shared by IRANZ, Building & Contractors Magazine and have had our experts interviewed by networks such as Radio New Zealand and the National Business Review.

It's an important step in our commitment to better tell the heart story of our metals industry and connect with our communities.

We secured expertise you can trust

As we said goodbye to our Director Wolfgang Scholz, we've welcomed in a new era under the direction of Troy Coyle. So far, we've ushered in policy change, greater health & safety focus and a more cohesive lead team approach.

We also welcomed our new Information Services Officer, Musarrat Begum. She has successfully managed the transition of our library resources to a new cloud based online system. A move that will better connect our members to our knowledge base.

We reached out to our members

Asking them to talk frankly to us about their current challenges, innovation readiness and mindset for industry transformation. And, vitally what role they thought we could play in helping them.

Visiting members across Aotearoa from New Plymouth to Dunedin, Tauranga, Hamilton and more, the feedback was invaluable. Confirming that a significant gap exists in the innovation space for our industry which is desperately crying out to be filled.

It seems our members want to innovate but simply don't have the time or resources to do so. Many (50%) didn't even find it important enough to think about.

A good step we have taken to foster this is to introduce industry panels to select our FY19 R&D focuses. Composed of industry members - we believe this will ensure we work on projects that are industry wanted... and led!

Crucially, we've also acknowledged we have to work on better communicating our value proposition to our members. Something that FY19 will have a strong strategy around as part of Troys 'creating focus' agenda.

Our people

From left | **Structural Systems** | Senior Structural Engineer Dr Jing Cao, General Manager Dr Stephen Hicks, Finite Element Analyst Nandor Mago | **Welding Centre** | NDT/Inspection Specialist Peter Hayward, Research Engineer Holger Heinzel, General Manager Dr Michail Karpenko, Senior Welding Engineer Alan McClintock | **Management** |CEO Dr Troy Coyle | **Finance** | Accounts Officer Kam Subramani, | **Member Services and Support** | Manager Brian Low, Receptionist Raewyn Porter, Information Services Officer Musarrat Begum | **Marketing** | Manager Marketing & Communications Kim Nugent | **Consultant** | Dr Wolfgang Scholz | **Industry Development** | General Manager Dr Boaz Habib

Innovation is at the core of everything we do.

That's why we support and celebrate it within our metal engineering industry when ever we can.

A key step we took to do this, was the successful launch of our members only Innovation READY, SET, GO program.

The programs key focus is to help inspire and give confidence to our industry to launch an innovative culture and mindset within their organisations. Providing key tools that give them the practical applications to commercialise their products quicker, cost effectively and efficiently.

Why the focus on industry disruption & innovation?

The August closures of engineering icons A&G Price in Thames and AMTEC Engineering in New Plymouth coupled with the oil & gas industry decline proves we can't keep going as we always have. Innovation is crucial.

We also believe that innovation will drive industry collaboration so we can share ideas and knowledge to win more.

A catalyst for innovation

Knowledge sharing with industry

Publications & resources

Structural Systems

Journal Papers

- Ukanwa KU, Clifton GC, Lim JBP, Hicks SJ, Sharma U, Abu A. Design of a continuous concrete filled steel tubular column in fire. 2018, Thin-Walled Structures, 131, pp. 192-204, https://doi.org/10.1016/j.tws.2018.07.001
- Kang W-H, Hicks SJ, Uy B, Fussell A. Design resistance evaluation for steel and steel-concrete composite members. 2018, Journal of Constructional Steel Research, 147, pp. 523-548, https://doi.org/10.1016/j.jcsr.2018.05.009
- Ukanwa KU, Clifton GC, Lim JBP, Hicks SJ, Sharma U. Numerical Analysis of Plain and Steel Fibre Reinforced Concrete Filled Steel Tubular Slender Column, Advanced Steel Construction. 2018. 14(2), pp. 308-323, doi:10.18057/IJASC.2018.14.2.10
- Ukanwa KU, Clifton GC, Lim JBP, Hicks SJ, Sharma U, Abu A. Simple design procedure for concrete filled steel tubular columns in fire. 2018, Engineering Structures, 155, pp. 144-156, https://doi.org/10.1016/j.engstruct.2017.10.062
- Chaudhari T, MacRae GA, Bull D, Clifton GC, Hicks S. Analytical Methodology to Predict the Beam Overstrength Considering the Composite Slab Effects, Key Engineering Materials, 763, pp. 826-834, 2018, DOI: 10.4028/www.scientific.net/KEM.763.826
- Hicks SJ. Design shear resistance of headed studs embedded in solid slabs and encasements. 2017, Journal of Constructional Steel Research, 139, pp. 339-352, https://doi.org/10.1016/j.jcsr.2017.09.018
- Ukanwa KU, Lim JBP, Sharma U, Hicks SJ, Abu A, Clifton GC. Behaviour of continuous concrete filled steel tubular columns loaded eccentrically in fire. 2017, Journal of Constructional Steel Research, 139, pp. 280-287, https://doi.org/10.1016/j.jcsr.2017.09.030
- Gholamhoseini A, Khanlou A, MacRae G, Hicks S, Scott A, Clifton C. Short-term behaviour of reinforced and steel fibre–reinforced concrete composite slabs with steel decking under negative bending moment. 2017, Advances in Structural Engineering, https://doi.org/10.1177/1369433217739710

Conference papers

- Hicks S, Uy B, Kang W-H. New developments in international steel and concrete composite design standards (Keynote Lecture), 13th International Conference on Steel, Space and Composite Structures (SS18), 31 January – 2 February 2018, Perth, Australia
- Cao J, Hicks S, Popa-Ola S. Determination of the design value for longitudinal bond strength for a new composite slab system according to new AS/NZS 2327, 13th International Conference on Steel, Space and Composite Structures (SS18), 31 January – 2 February 2018, Perth, Australia
- Ukanwa K, Clifton GC, Lim JBP, Abu A, Hicks SJ, Sharma U. Behaviour and design of a continuous concrete-filled steel tubular column in fire for a multi-storey building, 16th International Symposium on Tubular Structures (ISTS16), 6-6 December 2017, Melbourne, Australia
- Ukanwa K, Clifton C, Lim J, Abu A, Hicks S, Sharma U. Fire design of continuous concrete filled steel tubular column for a multi-storey building, Applications of Structural Fire Engineering (ASFE '17), 7-8 September 2017, Manchester, UK
- Hicks S, Uy B, Kang W-H. The New Joint Australian and New Zealand Design Standard for Steel and Composite Bridges AS/NZS 5100.6 – Part 6: Steel and Composite Construction, 8th International Conference on Composite Construction in Steel and Concrete (CCVIII), 30 July-2 August 2017, Wyoming, USA
- Hicks S, Ciutina A and Odenbreit C. Development of a New Push Test for Eurocode 4, 8th International Conference on Composite Construction in Steel and Concrete (CCVIII), 30 July-2 August 2017, Wyoming, USA
- Uy B, Hicks S, Kang W-H, Thai H-T, Aslani F. The New Australia/New Zealand Standard on Composite Steel-Concrete Buildings, ASNZS2327, 8th International Conference on Composite Construction in Steel and Concrete (CCVIII), 30 July-2 August 2017, Wyoming, USA
- Mago N, J Cao, S Hicks. Fire Performance of Light Steel Framed Floors in Multi-Storey Residential Buildings, SESOC Conference 2017, 2-3 November 2017, Wellington, NZ
- Mago N, Cowie K, C G Clifton. Finite Element analysis of eccentrically braced frames with removable link, STESSA '18 The 9th International Conference on Behaviour of Steel Structures in Seismic Areas, Christchurch, NZ

Welding Centre

- M Karpenko, D O'Riley: "New Zealand experience establishing the road to new steelwork standard compliance". Australian Steel Convention, Gold Coast, September 2017.)
- M Karpenko, A McClintock: "The cost of quality". Metals Industry Conference, Christchurch, September 2017)
- Hafez Taheri, G. Charles Clifton, Pingsha Dong, Michail Karpenko, Gary M. Raftery and James B.P. Lim: Seismic Tests of Welded Moment Resisting Connections Made of Laser-Welded Stainless Steel Sections. STESSA Conference 2018, Key Engineering Materials ISSN: 1662-9809.
- Michail Karpenko, Alan McClintock, Marlon Helmes and Holger Heinzel: Seismic Requirements for the Welding and Inspection of the K-Area in Hot Rolled Products to AS/NZS 3679.1. STESSA Conference 2018. Key Engineering Materials. ISSN: 1662-9809
- Heinzel H, Field based materials test rig for geothermal ORC plant components, Paper presented at the 38th New Zealand Geothermal Workshop, Auckland, New Zealand.
- Fussell, K. Cowie, S. Hicks and M. Karpenko, "Basis for and implications of key changes to 2016 structural steel product standards," SESOC Journal, vol. 30, no. 1, pp. 38-43, 2017.
- X-1903-18: Cyclic tests of welded moment resisting connections made of stainless steel sections (Hafez Taheri1, G. Charles Clifton, Pingsha Dong, Michail Karpenko, Gary M. Raftery and James B. P. Lim)
- X-1904-18: Recommendations for the welding and inspection of the k-area in hot rolled products for seismic applications in New Zealand (Michail Karpenko, Alan McClintock, Marlon Helmes and Holger Heinzel)
- A Fussell, K Cowie, S. Hicks and K. Karpenko, Checklist for imported steelwork, Steel Advisor QLT1002, Steel Construction New Zealand Inc, 2016.
- A Fussell, K Cowie, S Hicks, M Karpenko, Ensuring compliance of structural steelwork – Regardless of origin, SESOC, vol. 29, no. 1, 2016.

NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION
INCORPORATED

FINANCIAL STATEMENTS
FOR THE YEAR ENDED 30 JUNE 2018

Financial statements & notes

NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

Financial Statements
For the Year Ended 30 June 2018

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NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

Directory
For the Year Ended 30 June 2018

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 (Chairman) Noel Davies, Hydraulink Fluid Connectors (HEERF Chairman) Mathew Black, New Zealand Steel Ltd (General Manager of NZ Steel) Dieter Adam, NZMEA Darren O'Riley, Steel Construction New Zeland Inc. (Co-opted) **Ordinary and Associate Members** David Moore, Grayson Engineering Ltd Dave Anderson, John Jones Steel Mike Lehan, Page & MacRae Prof. Thomas Neitzert, AUT University Craig Stevenson, Aurecon New Zealand Ltd Jennifer Hart, BECA Paul Bryant, Raed El Sarraf, Opus International Consultants Matthew Kidson, Kernohan Engineering
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

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NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

Executive Committee's Report and Statement of Responsibility
For the Year Ended 30 June 2018

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 2018, 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 2018;

- 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 2018;

- 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:

M Chen	5/9/18.
Chairman	Date
T. Neilson	5/9/18
Director	Date

RSM

RSM Hayes Audit
PO Box 9588
Newmarket, Auckland 1149
Level 1, 1 Broadway
Newmarket, Auckland 1023

T +64 (9) 367 1656
www.rsmnz.co.nz

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 2018;
- 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 2018, 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 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

RSM Hayes Audit
Auckland

11 September 2018

NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

Statement of Comprehensive Revenue and Expense
For the Year Ended 30 June 2018

	Notes	2018	2017
		$	$
Revenue from non-exchange transactions	11	2,229,068	2,506,019
Revenue from exchange transactions	11	1,169,984	1,202,962
Total Revenue		**3,399,052**	**3,708,981**
Expenses			
Employee salaries and wages		1,515,299	1,687,758
Member Services		265,229	220,004
Seminar Expenses		78,529	148,853
Consulting Expenses		460,898	297,290
External Research		399,226	592,001
HERA House Expenses		100,933	92,049
Depreciation Expense		102,525	99,896
Rent Expenses		276,220	276,220
Other expenses		256,007	254,675
Total expenses		**3,454,866**	**3,668,746**
Finance income		36,997	37,595
Finance costs		-	-
Net finance income		**36,997**	**37,595**
Net surplus before tax		**(18,817)**	**77,830**
Income tax expense	16	-	-
Net surplus for the year		**(18,817)**	**77,830**
Other comprehensive revenue and expense		-	-
Total comprehensive revenue and expense for the year		**(18,817)**	**77,830**

RSM

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

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NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

Statement of Changes in Net Assets/Equity
For the Year Ended 30 June 2018

	Accumulated comprehensive revenue and expense	Total
	$	$
Closing equity 30 June 2016	1,642,322	1,642,322
Total comprehensive revenue and expense for the year	77,830	77,830
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	**1,701,335**	**1,701,335**

RSM

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

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NEW ZEALAND HEAVY ENGINEERING RESEARCH ASSOCIATION INCORPORATED

Statement of Financial Position
As at 30 June 2018

	Notes	2018	2017
ASSETS		$	$
Current assets			
Cash and cash equivalents	5	257,091	409,451
Receivables from exchange transactions	6	203,322	430,083
Receivables from non-exchange transactions	6	192,078	191,223
Related party Loan	7	271,340	421,340
Investments- Term deposits (bank)		630,562	414,443
Inventories		8,847	7,626
		1,563,240	1,874,166
Non-current assets			
Property, plant and equipment	8	326,676	344,623
		326,676	344,623
TOTAL ASSETS		**1,889,916**	**2,218,789**
LIABILITIES			
Current liabilities			
Payables (from exchange transactions)	10	67,676	198,552
Payables (from non- exchange transactions)	10	75,739	245,349
Employee benefits		45,166	54,736
		188,581	498,637
TOTAL LIABILITIES		**188,581**	**498,637**
TOTAL NET ASSETS		**1,701,335**	**1,720,152**
Net Assets / Equity			
Accumulated comprehensive revenue and expense		1,701,335	1,720,152
Total Net Assets / Equity		**1,701,335**	**1,720,152**

For and on behalf of the Board:

M Chu — 5/9/18
Chairperson — **Date**

T. Nicholls — 5/9/18
Director — **Date**

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The above statement 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 2018

	Notes	2018 $	2017 $
CASH FLOWS FROM OPERATING ACTIVITIES			
Receipts from members / activities		3,611,834	3,439,023
Interest received		36,997	37,595
Cash paid to suppliers and employees		(3,650,494)	(3,876,029)
Net cash inflow from operating activities		**(1,663)**	**(399,411)**
CASH FLOWS FROM INVESTING ACTIVITIES			
Sales/(Purchases) of term deposits		(216,119)	388,319
Purchase of property, plant and equipment	8	(84,578)	(42,356)
Proceeds from sale of property, plant and equipment		-	-
Net cash outflow from investing activities		**(300,697)**	**345,963**
CASH FLOWS FROM FINANCING ACTIVITIES			
Repayment from related party loan		150,000	300,000
Loan to related party		-	(571,340)
Net cash outflow from financiang activities		**150,000**	**(271,340)**
Net increase in cash and cash equivalents		(152,360)	(324,788)
Cash and cash equivalents at 1 July		409,451	734,239
Cash and cash equivalents at 30 June	5	**257,091**	**409,451**

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

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Notes to the Financial Statements
For the Year Ended 30 June 2018

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 Tier 2 Not-For-Profit PBE IPSAS 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.

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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.

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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.

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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.

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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.

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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.

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5. CASH AND CASH EQUIVALENTS

	2018 $	2017 $
Cash and cash equivalents include the following components:		
Current Account	204,839	141,148
Call Account	52,252	268,303
	257,091	409,451

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

	2018 $	2017 $
Receivables from exchange transactions		
Accounts receivable	216,446	430,083
Bad debt provision	(13,124)	-
	203,322	430,083
Receivables from non-exchange transactions		
Accrued income - steel and welding levies	192,078	191,223
	192,078	191,223

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
	$	$	$	$	$
2018	216,446	177,073	10,948	1,280	27,145
2017	430,083	153,386	117,730	15,447	143,520

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 HEERF during the year as follows:
- building management fees of $6,000 (2017: $6,000) and administration fees of $10,000 (2017: $10,000) for the management and administration of HEERF's building, HERA House
- rental expenses on buildings of $276,220 (2017: $276,220)
- receipts of grants totaling $92,500 (2017: $122,000)
- interest income received of $19,112 (2017: $19,156)
- repayment of related party loan of $150,000 (2017: $300,000)

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 2018 is $271,340 (2017: $421,340).

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 $529,089 (2017: $628,256). The total number of key managemet personnel was 4 (2017: 5).

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 2018

	Opening balance	Additions	Disposals	Depreciation	Closing balance
Office Furniture	124,192	-	-	31,384	92,808
Fixtures & Fittings	3,145	3,099	-	965	5,279
HERA House Refurbishment	39,818	-	-	5,110	34,708
Motor Vehicles	69,975	67,770	7,607	28,894	101,244
Office Equipment	59,522	21,316	-	30,726	50,112
Training Equipment	47,971	-	-	5,446	42,525
	344,623	92,185	7,607	102,525	326,676

	2018			2017		
	Cost	Accumulated depreciation	Carryng value	Cost	Accumulated depreciation	Carryng value
	$	$	$	$	$	$
Office Furniture	124,192	31,384	92,808	155,514	31,322	124,192
Fixtures & Fittings	6,244	965	5,279	3,761	616	3,145
HERA House	39,818	5,110	34,708	44,928	5,110	39,818
Motor Vehicles	130,138	28,894	101,244	102,943	32,968	69,975
Office Equipment	80,838	30,726	50,112	83,956	24,434	59,522
Training Equipment	47,971	5,446	42,525	53,417	5,446	47,971
	429,201	102,525	326,676	444,519	99,896	344,623

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9. FINANCIAL INSTRUMENTS

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

i. Classification and fair values of financial instruments

	Financial Assets Loans and receivables	Financial liabilities Amortised cost
	$	$
30 June 2018		
Cash and cash equivalents	257,091	-
Receivables	395,400	-
Payables	-	67,676
	652,491	67,676
30 June 2017		
Cash and cash equivalents	409,451	-
Receivables	621,306	-
Payables	-	198,552
	1,030,757	198,552

10. PAYABLES

	2018 $	2017 $
Exchange transactions		
Accounts Payable	67,676	198,552
	67,676	198,552
Non-Exchange transactions		
Income received in advance	61,586	216,465
GST payable	14,153	28,884
	75,739	245,349

The revenue in advance represents income in advance from AGGAT Research Contract- Above Ground Geothermal & Allied Technologies, which funds the AGGAT research project. The funding received for the programme for which milestones were reached during the year is recognised as revenue in that year. The project concerned with funding from Government is the Above Ground Geothermal & Allied Technologies (AGGAT) project which started in October 2012. Government pays equal amounts every year over the total period of two years, while expenditure varies due to changing projects tasks, resulting in a large portion of funding being deferred to next year based on percentage of project completion. Therefore the unspent balance of $nil (2017: $216,465) has been treated as income in advance. The income in advance is recognised as per the conditions of the contract.

11. REVENUE

	2018 $	2017 $
Revenue from non-exchange transactions		
Steel & Welding Levies	1,883,508	1,995,416
Government research funding from MBIE - AGGAT	253,060	388,603
Grants from HEERF	92,500	122,000
	2,229,068	2,506,019
Revenue from exchange transactions		
Membership Subscriptions	166,971	162,522
Other income	8,977	23,851
Consulting & Industry Projects	586,965	577,836
Services to third parties	29,759	26,398
Publication	45,838	64,158
Welding Modules	3,214	13,295
Rent	110,347	112,966
Seminar & Courses	201,913	205,936
Administration and Building management fees from HEERF	16,000	16,000
	1,169,984	1,202,962

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12. CAPITAL COMMITMENTS

There are no capital commitments at the reporting date. (2017: Nil).

13. CONTINGENT ASSETS AND LIABILITIES

There are no contingent assets or liabilities at the reporting date. (2017: 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 (2017: 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:

	2018 $	2017 $
Within one year	276,220	276,216
After one year but not more than five years	1,104,880	828,648
More than five years	713,568	1,012,807
	2,094,668	2,117,671

16. INCOME TAX EXPENSE

HERA is a research based society established mainly to promote and encourage scientific and industrial research. HERA has applied for the income tax exemption as per the 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, however due to a technical oversight the organisation is in the process of obtaining approval by the Royal Society of New Zealand for its own record keeping purposes.

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.

18. SEPARATE FINANCIAL STATEMENTS

These financial statements are separate financial statements of the Society (HERA). There had been an amendment to HEERF's constitution, accordingly HERA no longer controls HEERF, therefore no consolidated financial statements are required to be prepared in the future.

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HERA
innovation in **metals**

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