



Good grounds for the future

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The New Zealand Federation of Piling Specialists – an introduction

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ABSTRACT

With the significant growth currently being experienced in the foundations market it has been recognized by many of the leading geotechnical contractors that collectively they lacked a voice and ability to shape the industry in terms of quality, Health and Safety and general best practice. Taking inspiration from the United Kingdom's construction industry where a trade association group known as the Federation of Piling Specialists (FPS) has been representing the geotechnical industry there and fostering better standards since its inception in 1963, five leading geotechnical contractors have set about establishing a New Zealand equivalent of the FPS.

The New Zealand FPS (NZFPS) has been created with the purpose of:

- maintaining and improving the standards of workmanship, technical competence, safety and innovation in carrying out specialist foundation techniques of all types and kinds;
- promoting the common interests of its members and expressing the views of its members to government departments, consulting and civil engineers, architects, contractors, professional institutions, public authorities, nationalised industries and other interested parties; and
- conducting training, setting standards and monitoring work in relation to any of the above.

The membership registration system sets out a rigorous benchmark to ensure that its members maintain highest standards in the above areas in-keeping with the objectives of the NZFPS.

1 THE CURRENT STATE OF THE FOUNDATION MARKET IN NEW ZEALAND

The New Zealand foundation market has experienced significant growth over the past ten years. This has been caused by both increased government spending on infrastructure and the increasing price of land making it more economical for developers to build up, not out.

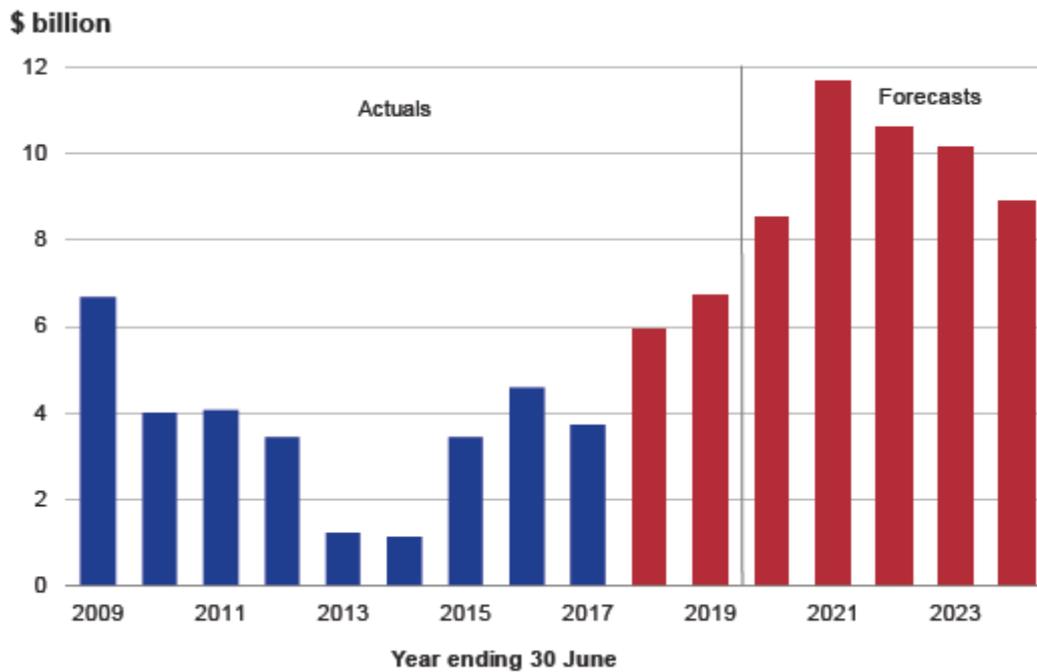


Figure 1 - Infrastructure Net Capital Spending (The Treasury, 2019)

Historically due to our geographical distance from major industrial centres, high import costs and variable workload, the foundation market in New Zealand relied on “Kiwi Ingenuity” to deliver geotechnical foundation solutions where possible, by utilising readily available resources, and international experience brought in on a one-off basis for those projects where necessity dictated it.

The industry has lacked capital investment as often it was more economical to take longer with less advanced methods and equipment, than to invest significant capital costs to establish more efficient methods and equipment into the country when there was no guarantee of a sustainable market for their continued utilisation.

In addition, New Zealand cities have had a tendency to expand out rather than up as consumers favoured increased living space and land over proximity to city centres. Between 1996 and 2012 expansion in urban areas saw a 10% increase, with nearly 66,000 hectares of tussock, grassland, shrubland and indigenous forests cleared for development (Ministry for the Environment & Stats NZ, 2018). This urban sprawl meant that the demands on foundations were not significant, projects rarely needed piles or ground improvement as the associated buildings were typically low-rise and low density. Relatively cheap land prices and high vertical build construction costs facilitated this trend.

However increased demand for commercial/office space, a growing population and increased demand for high-density homes in recent years has seen a significant increase in the number of vertical building projects being undertaken in New Zealand.

New homes consented nationally, year ended March 1991–September 2019

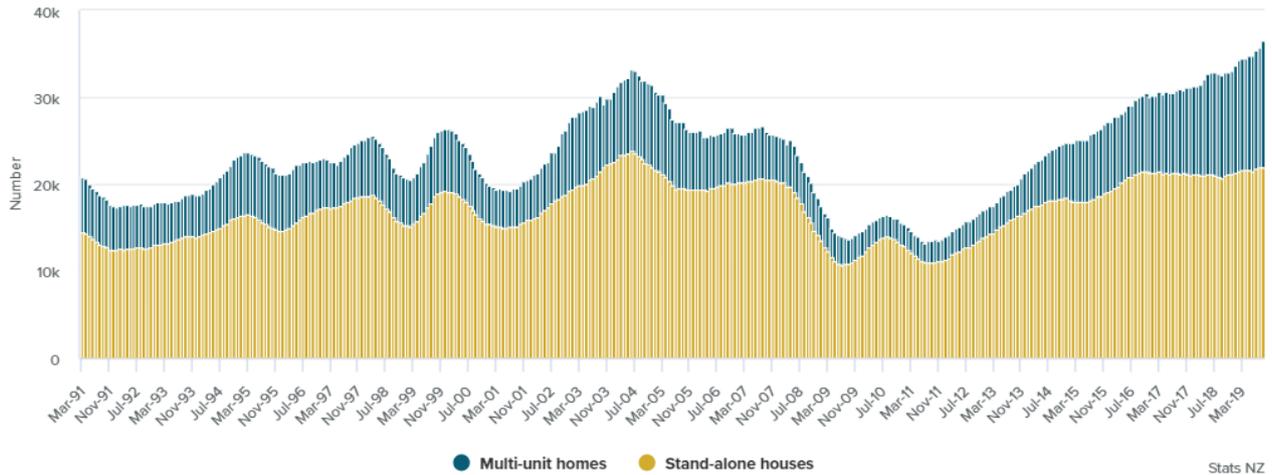


Figure 2: New homes being consented (Stats NZ, 2019).

This growth in vertical builds and infrastructure spending has increased the demand for larger and more technically advanced foundation solutions which require more from contractors both in terms of workmanship and technical ability

The current growth in the construction sector is also challenging the current labour market. Foundation contractors are struggling to source new workers to resource these projects.

The findings of the independent task force on workplace health and safety in April 2013, and the subsequent introduction of the Health and Safety at Work Act 2015, have meant that employers in the foundation industry are much more discerning in what they require from their workforce from a compliance and safety perspective. This has compounded the already significant skills shortage facing the New Zealand foundation industry.

In response to these challenges the foundation market is starting to invest in people and plant, in the medium to long term, rather than responding to these challenges on an ad hoc basis. This is leading to an increase in maturity and skill sets in the people market. With the scaling up and skilling up of the industry it was felt by members of some of the larger geotechnical contractors (Brian Perry Civil, CLL, March Construction, Spiral Drillers & Fulton Hogan) that, to sustain this growth and ensure quality and safety were not compromised, an industry association was needed to provide guidance and foster an environment where contractors could share experiences and promote best practice.

2 INSPIRATION DRAWN FROM THE UNITED KINGDOM

When looking for inspiration on how to structure such an association, the FPS in the United Kingdom was a natural choice. It was the inspiration for The Piling and Foundation Specialist Federation of Australia and has a long history and established track record of furthering the standards of the industry in the United Kingdom.

The foundation industry in the UK established a collective voice for their geotechnical contractors very early on in 1963 when many four of the leading geotechnical contractors grouped together to provide support and ideas on best practice and health and safety initially in an informal capacity.

Following the revisions to the Restrictive Trade Practice Act in 1976, which set out strict rules for conduct of trade representative bodies to ensure commercial competitiveness, the Federation of Piling Specialists was first incorporated in 1977. The founding members of Stent Foundations Ltd (now Balfour Beatty Ground

Engineering), Pigott Foundations Ltd (now Bachy Soletanche Ltd), Cementation Piling and Foundations Ltd (Now Cementation Skanska ltd), and Hercules Piling Ltd (now Balfour Beatty Ground Engineering) came together to sign the very first memorandum of association.

This memorandum of association set out the Federations' objectives to:

- Maintain and improve standard of workmanship, technical competence, safety, and innovation in carrying out piling work, diaphragm walling and other specialist foundation techniques of all types and kinds.
- Commission, publish, print, and disseminate information in connection to promoting these improved standards
- Promote the common interests of its members and to express the views of its members to government departments, consulting and civil engineers, architects, contractors, professional institutions, public authorities, and other interested parties.
- Conduct training, set standards, and monitor work in relation to these objectives.

Since these early beginnings nearly 60 years ago, the FPS in the UK, has grown into an internationally recognised authority in the field of foundation and geotechnical engineering.

It has helped to shape the industry in the UK, with its tireless work in developing standards such as the Institute of Civil Engineers Piling and Embedded Retaining Wall Specification and its' many revisions.

In response to a growing number of incidents involving piling rigs and cranes toppling over, the FPS put in place minimum standards for working platforms, and with their Building Research Establishment (BRE) prepared and released Report-BRE470 in 2004 which is a guide to good practice in relation to working platforms for tracked plant.

Working with the Construction Industry Training Board (CITB) the FPS develops training courses and certification to ensure workforces are trained to minimum standards recognised by the industry. It is mandatory to have CITB accreditation now to operate certain types of plant (e.g Excavators, Cranes, Piling rigs, etc). This has resulted in a highly skilled and competent geotechnical national workforce that is acutely aware of the requirements of both quality and safety.

The FPS's membership has swelled from the original four founding contractors to twenty, and an additional seventeen associate members, spanning the full range from tier one contractors down to tier two and three contractors. Regular auditing of its membership's operational systems against the FPS' key KPIs ensures their membership is made up of only those committed the FPS's objectives and encourages continual improvement.

The FPS's associate members include some of the largest geotechnical engineering consultants, material, and equipment suppliers in the UK. The membership benefits from the association as the FPS regularly publishes numerous resources and position papers on geotechnical foundation techniques and best practice.

3 THE NEW ZEALAND FEDERATION OF PILING SPECIALISTS

With the assistance, support and insights from team members from the FPS in the UK, we incorporated the New Zealand Federation of Piling Specialists on 28th November 2019.

As outlined in the Abstract, the objectives of the NZFPS are to:

- Maintain and improve standards in workmanship, technical competence, safety and innovation in carrying out specialist foundation techniques of all types and kinds.
- Publish and disseminate information in connection to promoting these improved standards, such as guidance papers and best practise notes.
- Promote the common interests of its members and to express their views to Government Departments, Consulting and Civil Engineers, Architects, Contractors, Professional institutions, Public Authorities, and other interested parties
- Work with recognised training providers to develop training modules and standards to improve the competency and skills of our industry.

The NZFPS aims to be an encouraging, open, and transparent environment where members share information for the greater good of the industry. The Federation's size, while small, should allow it to be dynamic in its response to industry challenges and adopt the learnings from similar associations around the world to benefit of the New Zealand foundation industry.

Our members benefit from access to our resource library, QSE systems and being part of a collaborative community that works together to solve common issues and build a better understanding of geotechnical engineering techniques.

3.1 Health and Safety

The 2013 report on workplace health and safety identified inadequate leadership as a key weakness in New Zealand's health and safety management systems (Independent Taskforce on Workplace Health & Safety, 2013). The formation of the NZFPS is aimed at addressing this weakness by providing guidance and advice on Health and Safety standards within our industry. This includes sharing near miss and accident investigations findings to ensure that, as an industry, we address risks and hazards to minimise their reoccurrence. It is also envisaged that the NZFPS will act on behalf of its members to lobby clients and contractors to address areas that present regular health and safety risks to our members' workforces, such as working platform construction and splicing details on pile cages.

The NZFPS provides a platform for its members to share information and have open discussion on health and safety matters, knowing they are in a supportive environment of their peers who share their goals. It provides a network for problem solving and advice.

In addition to the support and guidance, the NZFPS also acts to help members to benchmark, assess and improve their current health and safety systems to ensure continual improvement by offering a health and safety auditing service. The membership assessment is a starting point for getting companies to assess their current health and safety standard and provide targets to aspire to. By undertaking routine (every three years) auditing of its members health and safety systems, the NZFPS ensures that its members are truly committed to the collective objective of improving the standard of health and safety within the industry. By establishing an ever-increasing pass mark (5% higher than previous audit score) it is believed this will also promote continuous improvement.

3.2 Training

To meet its objective of improving the standards of training and competency of the industry workforce, the NZFPS recognised that there needs to first be a collective standard established. At present there is no training qualification for any part of the industry. Currently, competency and training varies from company to company. Most training matrices are set by the company (with limited reference to external standards) and are fairly rudimentary. The Federation aims to provide a clear career path and standards of training for every role within our industry, from a New Starter to Dogmen/Leading Hand and on to Superintendent and Plant operators, as demonstrated in Figure 2.

At present, the skill level required on entry into the industry is low, which makes it very easy to recruit but increases risks around health and safety, quality of workmanship and generally the confidence clients and consultants can have in their contractors. An example of this lack of any training requirement within the New Zealand market is the lack of qualification or training required before you can operate a 100t piling rig or can sign off pile quality records. This exposes us all to significant health and safety risks in a very unforgiving environment.

To address this short coming, the NZFPS is actively working with training bodies to put training and setting a ‘time in grade’ requirement to all these levels. We believe that this will raise the standards for health and safety, workmanship and subsequently boost the confidence of our clients, contractors, and our workforce in the foundation sector.

By providing a clear career path for those working in the foundation industry it is hoped that the FPS will help attract and retain skilled workers by giving them clarity on what a future in the foundation industry can provide and add value to their roles and self-worth.

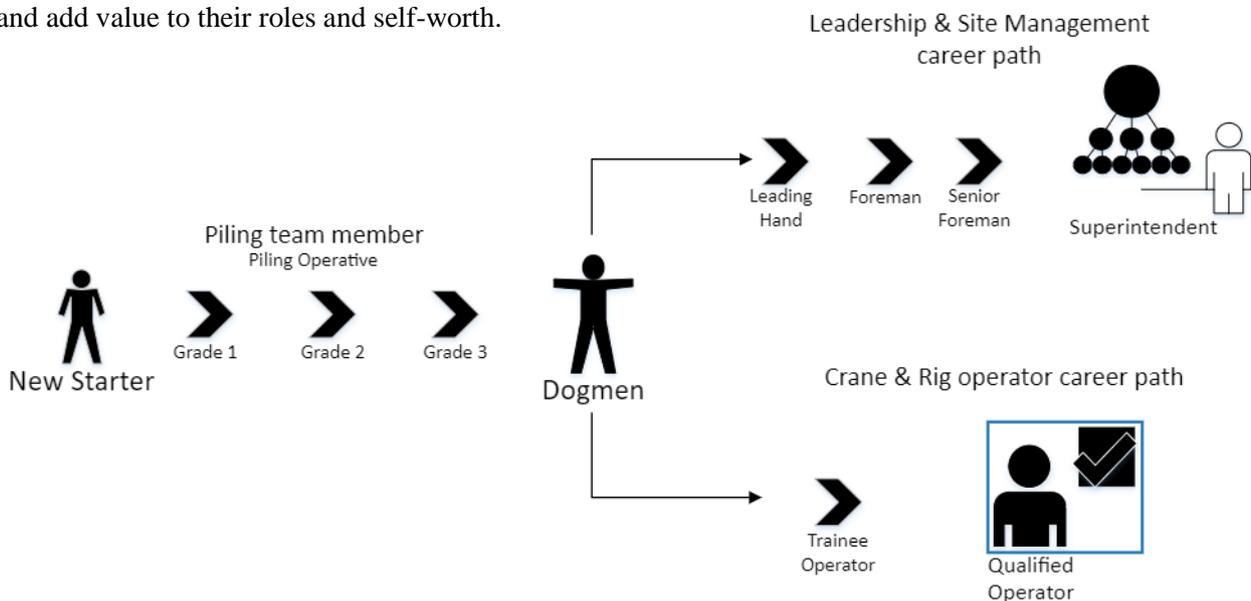


Figure 3 - New Zealand Piling Federation industry career path

Members of the NZFPS will have the benefit of being able to access the training systems and matrices developed by the Federation to help them establish their own training systems with the knowledge that they are fit for purpose and reflective of the direction in which the industry is heading.

3.3 Workmanship

The NZFPS' third objective is to promote best practice when it comes to quality and workmanship of their members. This will be achieved by ensuring that contractors have good representation within the design community and by having an active input in the development of design standards and specifications to ensure they are applicable to the New Zealand market. This engagement will help to ensure that engineers are producing fit for purpose designs, and contractors work to clear achievable minimum standards that will ensure quality workmanship.

The NZFPS has developed a membership auditing process that goes above and beyond ISO9001. Its auditing system is specifically adapted to the foundations market to ensure its members have suitable quality management systems in place both in the office and onsite to ensure high standards of workmanship and compliance within the industry. Non-conformances issued by the Federation during these audits must be rectified should the company wish to maintain their membership.

Members will benefit from the assistance and guidance provided by the NZFPS in developing robust quality systems and practises that will reduce their rework costs and ensure they adequately manage the risks associated with poor workmanship.

4 MEMBERSHIP

The Federation actively encourage application for membership from anyone who is interested in the objectives it aspires to promote and the benefits it brings to its members.

The NZFPS have structured their membership registration system to ensure that members are fully committed to the objectives of the federation and the continued improvement of its members.

We recognise that we are at a very early juncture in our establishment and that it is not practical to expect all prospective members to meet the high standards we aspire to instil. To this end the NZFPS has created two categories of membership to foster a greater engagement from contractors looking to join.

4.1.1 Aspiring members

On first applying for membership, applicants who meet the minimum standards set out in Table 1 are classified as Aspiring Members. All aspiring members must have passed NZFPS's membership audit within their first two years of membership to become a 'full member.' Whilst a member has Aspiring Membership status the NZFPS will actively coach it and assist with establishing the minimum standards required to pass the full membership audit. Aspiring members will have full access and voting rights of full membership but will however not be able to hold positions within the leadership committee or sub-committees.

4.1.2 Full members

Having demonstrated a company structure and practices that actively promote the objectives of the Federation by achieving a score initially greater than 40% in the membership audit, successful applicants are classified as full members. Full members must undergo follow up membership audits every three years, in which they must demonstrate continued improvement. To foster this, the passing score is raised by 5% from their previous passing grade.

We encourage full members to actively get involved with the leadership and development of the Federation to ensure that it continues to address their needs. Our value comes through our members being active in the decision making of our committees.

4.1.3 Associate membership

The foundation industry is influenced by many different entities, not just by the contractors undertaking the installation of foundations. The Federation welcomes all and any membership applications of those wishing to associate with us and our membership. Those interested parties who do not actively engage in foundation techniques but may be influenced by the industry are encouraged to apply for our associate membership. This membership guarantees them access to our events, committee meetings and resources but, like aspiring members, they are unable to vote on any decisions being made in our committees.

Interested parties should visit the Federation’s website www.NZFPS.com where they can make contact with the membership team who can direct them further on making an application.

Table 1: Federation of Piling Specialists - Registration System Minimum Standard for Aspiring Members

	PREQUALIFICATION SECTION
	QUALITY SYSTEMS
1.1	Registrations BS EN ISO 9001/CE or suitably demonstrate a quality policy and active procedures are in place and being implemented.
	HEALTH and SAFETY SYSTEMS
2.1	Registrations ASNZ 4801
	TRAINING
3.1	Demonstrate an active training policy and that the skills competency of their workforce is being assessed and recorded
	TECHNICAL CAPABILITY
4.1	Has a nominated Chief Engineer with 10 years plus industry experience
	ENVIRONMENTAL/SUSTAINABILITY SYSTEMS
5.1	Registrations BS EN ISO 14001 or suitably demonstrate an environmental/sustainability policy is in place and active procedures are being implemented.

5 CONCLUSION

"Transformation is not something the government or an industry body can do to a sector, it's something all participants must make happen. We all need to ask ourselves – what can I change and how can we work together differently?"

Peter Reidy, Construction Sector Accord Steering Group co-chair and CE Fletcher Construction.

The formation of the NZFPS is in direct response to this question of which asks what the foundation industry can change and how it can work together differently to effect positive transformation. The benefits that can come of this are clear when assessing the success of the United Kingdom’s Federation.

The Federation’s goals of maintaining and raising standards of workmanship, quality, training, health and safety can only be achieved by a group effort. It will require engagement from the industry as a whole and assistance in promoting an open and collaborative environment.

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