

CIVIL CONTRACTORS NEW ZEALAND / HIREPOOL

CONSTRUCTION EXCELLENCE AWARDS

'18

Z People Awards
Connexis Company Training
Development Awards



in association with **CONTRACTOR:** New Zealand's civil contracting magazine



CONGRATULATIONS!

On behalf of the team at Hirepool, a big congratulations to all the category winners and category finalists in the 2018 CCNZ Hirepool Construction Awards. All projects were worthy winners so you should feel proud of your achievements. As New Zealand's largest hire company, we have involvement in many of these fantastic projects and we love nothing more than seeing them come to completion.

We look forward to working with you on your next award winning project.



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CCNZ / HIREPOOL CONSTRUCTION EXCELLENCE AWARDS 2018



PUBLISHER
 Contrafed Publishing Co Ltd
 Suite 2.1, 93 Dominion Road,
 Mt Eden, Auckland
 PO Box 112357, Penrose,
 Auckland 1642
 Phone: +64 9 636 5715
 www.contrafed.co.nz

EDITOR
 Alan Titchall
 DDI: +64 9 636 5712
 Mobile: 027 405 0338
 Email: alan@contrafed.co.nz

CONTRIBUTING EDITOR
 Richard Silcock

ADVERTISING / SALES
 Charles Fairbairn
 DDI: +64 9 636 5724
 Mobile: 021 411 890
 Email: charles@contrafed.co.nz

ADMIN / SUBSCRIPTIONS
 DDI: +64 9 636 5715
 Email: admin@contrafed.co.nz

PRODUCTION
 Design: TMA Design +64 9 636 5713

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ISSN: 0110 1382



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Civil Contractors NZ established the Construction Excellence Awards in 1978 as a means of recognising excellence in the civil engineering, construction, maintenance and contracting industry. Hirepool has been a proud sponsor of the awards since 2003.

Civil contractors who are members of CCNZ compete for the awards annually. The winners are presented with their award at a gala awards dinner held in conjunction with CCNZ's annual conference.

In 2018 the annual conference and awards were held in August at Claudelands Events Centre, Hamilton.

Celebrating Excellence



We thank the awards judges: Category 1, 2 and 5, Dave Macdonald and Paul Bishop; Category 3 and 4, Steve Hart and Alan Powell. Their comments on the winning entries are summarised below.

Category 1A: Projects up to \$5 million – smaller companies

WINNER: ARC Projects – Knights Drain and Pump Station

This project included a cast in situ concrete deep well construction, installation of major pumps and associated control equipment, connection to a rising main, an intake structure and associated site works and remedial landscaping.

All this work was carried out in a wetland area with a very high water table that impacted on the works. The planning of the works was to a high standard with the temporary works providing a safe site with access throughout.

For its size the project was complex, a challenging timetable was achieved, the outcome was to a high standard and positive working relationships with the client and consultant were shown. There were aspects of innovative thinking and project delivery achieved.

The project is a credit to this young company and provides the owner and the team an excellent track record to build off for future works and company growth.



Category 3: Projects with a value of between \$20 million and \$100 million

WINNER: Downer NZ / HEB Construction – Waitangi Wharf Upgrade, Chatham Islands

The judges note that all four finalists in category 3 this year were outstanding projects.

The Waitangi Wharf is a critical lifeline for the Chatham Islands, being the only port for commercial fishing operations, export and import freight operations including livestock and shipping of consumer items for the community.

The upgrade, consisting of a new wharf and breakwater together with new port facilities, provides security of supply for the foreseeable future and hence the importance of this project to the residents of the Chatham Islands. The upgrade project was undertaken by Downer and HEB, as part of the Memorial Park Alliance, for the Department of Internal Affairs and was completed on time and to budget.

The challenges of location and weather conditions ensured the project had a pioneering element to it. A workers' camp was required for the 50 strong workforce, being a six percent increase in island population. The project set up a concrete batching plant, precast yard, engineering workshop and site offices including its own power and water supply. A greenfield quarry was developed to supply the 100,000m³ of rock for concrete production and wharf reclamation. The development of strong stakeholder relationships and a strong team culture overcame other challenges including working in the middle of a congested live port and the variable weather conditions.

The judges acknowledge the other members of the Memorial Park Alliance, being the NZ Transport Agency, Tonkin and Taylor and AECOM.



Category 1B: Projects up to \$5 million – larger companies

WINNER: Schick Civil Construction – Victoria on the River

This project for the Hamilton City Council helps connect the City Centre to the Waikato River.

The 4000m² section was originally the site of a large commercial building that had previously been demolished to ground level, but not below. A complex architectural design led to tenders exceeding available funds. To resolve this the Council worked with the lowest tenderer to reduce costs while still delivering an asset for the City of which it could be proud.

Set in the heart of the city, on a challenging site with many unknowns and difficult conditions, the parties involved collaborated closely to reduce costs, share risk and plan a facility that allowed Council to meet its budget.

This project is an excellent example of what can be achieved with all stakeholders working closely together to deliver an outcome that overcame initial difficulties, while at the same time producing an asset for the City that is very attractive, functional and affordable.

HIGHLY COMMENDED: March Construction – Ocean Outfall Joint Replacement



Category 4: Projects with a value greater than \$100 million

WINNER: McConnell Dowell / HEB Construction JV - Mangere BNR Upgrade

Watercare's Mangere Wastewater Treatment Plant Biological Nutrient Removal Upgrade is a very significant expansion of the country's largest treatment plant, complicated by the need to insert transfer facilities within the operating plant to allow extension in a new greenfield facility on adjacent land.

The project, for Watercare, expands the capacity of the existing plant to ultimately provide for treatment of an additional 4m³/sec of effluent using a new, more energy efficient process, on an adjacent site. This expansion requires shoe-horning a significant transfer pump station and associated pipework into the operating plant to connect the new greenfield secondary treatment facility. Construction and commissioning of very significant water retaining structures, associated facilities and pipework for producing and distributing process air to manage biological growth and removal of sludge produced by the process for transfer back to the existing plant for final processing is required to achieve this.

The HEB Construction/McConnell Dowell Joint Venture won the competitively bid project which required construction on very poor ground, to very close tolerances while incorporating new facilities into Auckland's main treatment plant while keeping it in operation.

Category 2: Projects between \$5 million and \$20 million

WINNER: HEB Construction, Thorndon Container Wharf Temporary Works for CentrePort

This \$19 million project was for the recovery of the wharf from earthquake damage as quickly as possible to enable container movements to recommence. This work was developed through an enlightened client who separately sourced the skills and experience required.

The client, HEB Construction and a number of consultants were chosen and they all worked together to agree the design that would get the facility quickly and safely operational and taking into account resources that could be readily secured within New Zealand. This involved HEB's very successful repairs to the wharf tied in with the operational logistics of container movement to be transformed from business as usual to a completely new process.

This project is a great example of the whole team working collaboratively throughout to develop and construct within the challenging environment of a severely damaged structure and marine area to achieve the reoperation of the container wharf within 10 months and delivering commercial benefits to the Wellington region.

HIGHLY COMMENDED: McConnell Dowell – Glen Eden Storage Tank and Branch Sewer Upgrade for Watercare Services.



Category 5: Maintenance and management of assets

WINNER: Taylor's Contracting – Tasman District Rivers Maintenance

This unique contract involves the maintenance of 285 kilometres of rivers within the Tasman District Council area. Taylor's Contracting has brought sophisticated systems and new technology to bear on the planning and execution of this work so that, instead of being almost purely reactive, works are planned, vetted and recorded in a similar manner to a roading contract.

Working with the Council to change thinking from a reactive to a more proactive way of maintaining this asset has resulted in a more systematic way of programming work with cost benefits flowing to both the client and the contractor.

While there will always be an element of reactive work required after storm events, management of the river system has been improved over the years and the contract held by Taylors Contracting. The Judges consider that the approach employed here could well be a model for similar contracts in other areas with extensive river systems.

The contractor has demonstrated a willingness to work closely with Council, Fish and Game and affected landowners to protect water quality, fauna and flora, and adjacent property. All parties involved are highly satisfied with the result.





Environmentally compatible

CATEGORY 1A: Projects with a value of less than \$5 million (Company turnover less than \$10 million)

PROJECT: Knights Drain and Pump Station
CONTRACTOR: ARC Projects
CLIENT: SCIRT / McConnell Dowell
VALUE: \$1.3 million

The Knights drain and pump station project was completed in March 2017 as part of the Christchurch infrastructure recovery programme and comprised a storm water pumping station, a sheet piled inlet forebay, a control building and various associated site works. It was constructed on a Christchurch City Council reserve on Bexley Road adjacent to the Avon River.

Construction of the project initially involved temporary works which included building a sheet pile coffer dam and well-point dewatering, prior to the pump station structure being built.

As the pump station is an underground structure in a wetland area, the ground had to be dewatered and retained to allow for its construction. This procedure to lower the water table, involved 40mm well-points connected to a vacuum

pump and diversion of the existing drain around the work site.

The area for the 12-metre by six-metre in situ coffer dam was excavated and designed and constructed involving eight-metre long sheet piles and over 140-cubic metres of concrete to support the surrounding ground.

The concrete-constructed pump station houses two submersible pumps. These pumps are capable of pumping 700-litres of water per second when running in parallel.

In addition a 30-metre long, sheet pile inlet forebay was constructed to provide a large storage and recharge area 'upstream' of the pump house. This also provided flood resistance and reduced the cycling of the pumps.

In addition an electrical control room was built using hardwood cladding, and substantial site works including landscaping 'tied' the structure to its wetland environment.

There were numerous challenges associated with the project. The most significant being the construction of the large in situ concrete structure inside temporary works and 'tying' this structure to the inlet and forebay in a manner that was aesthetically and environmentally compatible with the surrounding wetland reserve. There was also a degree of pressure to complete the project before SCIRT was disestablished.

Landscaping of the site with native vegetation has enhanced the area, while the use of timber cladding for the control room has helped to reduce its visual impact on the surrounding reserve. ●



Going the extra mile

CATEGORY 1A: Projects with a value of less than \$5 million (Company turnover less than \$10 million)

PROJECT: Drake Street Stormwater Upgrade
CONTRACTOR: Construction Contracts (CCL)
CLIENT: Wellington City Council
VALUE: \$488,000

Following a period of gradual decline and some maintenance over many years, CCL was contracted to upgrade stormwater pipes and carry out remedial work at several Drake Street properties in the Wellington suburb of Hataitai.

The work included replacing old earthenware pipes with PVC stormwater pipes, grouting a section of pipe beneath a house and reinstating access to the properties affected. As it transpired there was considerable additional remedial work involved including: propping a veranda, removal of a fence and a concrete wall, making safe a failed brick pier, concrete underpinning, piling and constructing new retaining walls.

"It was a project that involved a huge amount of underpinning work, reinstatement and a little pipe work!"

In delivering the project CCL had to contend with steep, difficult ground conditions, wet weather, loose fill, tree roots and

a variety of buried debris. In addition access had to be maintained for the residents of the affected properties and this often necessitated the provision of alternative pathways and temporary steps.

In meeting the challenges CCL worked in a collaborative manner with all parties involved including the client, WSP Opus, sub-contractors, tree specialists and the property owners – maintaining excellent relations throughout the project, and achieving a 100 percent customer (residents) focus, and going the extra mile to satisfy them.

Some of the challenges encountered:

- Working in steep confined spaces, which due to the weather, soon became very muddy.
- Moving equipment and material up and down the steep sites was made easier with some ingenuity and instituting a multiple conveyor-belt system.
- Planning for and taking the necessary steps to stop ground/house movement, and monitoring and responding to any movement of surrounding dwellings.
- Excavating deeper than originally designed, particularly where this was to support existing retaining walls.
- Working around, or under, established large trees so that they could be retained.
- Destruction of thick (in some cases up to 700mm thick) concrete paths to gain access to the old pipe.

The project took just under four months to complete. ●



Collaboration and kiwi-know-how

CATEGORY 1A: Projects with a value of less than \$5 million (Company turnover less than \$10 million)

PROJECT: Camborne Walkway
CONTRACTOR: PCL Contracting
CLIENT: Porirua City Council
VALUE: \$177,900

Innovation, close collaboration and kiwi-know-how were the underlying factors that made this project a success.

PCL was called upon to redevelop a section of a popular walkway around the northern foreshore of the Pauatahanui Inlet on Porirua Harbour north of Wellington.

The design called for rock armouring, construction of timber and rock retaining walls, reconstituting the pathway, and laying culverts.

To allow continued access for the public and numerous boat-shed owners, the project was progressed in two stages and required the erection of a safety fence, signage and 'policing' around the work area.

In addition to resource consents, an extensive environmental plan was required by the Greater Wellington Regional Council due to the archaeological and historic aspects of the site.

The contractor overcame a number of construction challenges during the course of the project, including:

- Working with an Auckland based walkway specialist, required making quality control paramount and reporting robust.
- Due to the narrowness of the walkway and weight limits of the bridges, the use of heavy equipment was not possible. This necessitated the use of small Bobcats, excavators and dumpers.
- All construction work that encroached on the waterway had to be carried out within low-tide windows.
- To prevent silt and debris run-off into the waterway all stock-piled metal was contained within a custom made bin.
- All fish species found in old culverts and wetland areas had to be relocated and then returned to the inlet.
- Due to the large number of large road projects currently being constructed in the area, rock for the armouring and seawalls had to be sourced outside the area and then 're-engineered' to meet specifications.
- Due to the complexity of driving piles into the sand for the retaining walls, PCL trialled a number of solutions, that culminated in inserting PVC sleeves inside the steel casings and drilling down to bedrock.

The project took three and a half months to complete, some three weeks ahead of schedule. ●



**CAT 1B
 CONSTRUCTION
 EXCELLENCE
 AWARD 2018
 WINNER**

Something special

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Victoria-on-the-River Precinct
CONTRACTOR: Schick Civil Construction
CLIENT: Hamilton City Council
VALUE: \$4.9 million

Taking a derelict sloping site and former car parking building facing onto the Waikato River, and regenerating it into an amphitheatre suitable for people to gather and take in outdoor concerts, was no easy task.

Schick Civil Construction grabbed the nettle and after six months of solid work transformed the space, with 'V-shaped' and tiered terraced seating, granite and rock-salt finished concrete paving, a hardwood feature boardwalk, steel accents, and extensive state-of-the-art lighting and plantings – providing a city asset that is something special.

The project provided Schick with an end-to-end challenge and required thinking well outside the box during construction.

Some of the challenges included:

- Working on contaminated ground, removing 3000 cubic metres of soil, and being mindful of working alongside the

swiftly flowing Waikato River – all of which necessitated strict health and safety compliance.

- Working next to a multi-storey apartment block on one side and a nightclub and offices on the other, required careful attention to excessive noise, vibration and dust control.
- Installing three-tonne precast concrete panels to within a 'millimetre' of accuracy using a large crane required the upmost in skill of the operator.
- Providing the rock-salt finish on the 1250 square metres of concrete facia was an untried technique and the first time it has been used in Hamilton.
- Working with archaeologists and being mindful of archaeological discoveries.
- A section of the timber decking utilised imported hard wood (purple heart) that was fixed into place using over 18,000 ninety-millimetre long screws.

The project was complex and required a number of multi-disciplinary skills. Schick did all the contracting work, including a large proportion of the speciality services, ie drilled and poured the micro-piles, foundations and formwork, drainage, earthworks, pavements, and hard landscaping.

It also project managed the development and co-ordinated sub-contractors to provide the basalt paving, electrical wiring, installation of 'fairy' lights, Italian lighting bollards and soft landscaping. ●



CONSTRUCTION EXCELLENCE AWARD 2018
HIGHLY COMMENDED

Significant challenges overcome

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Ocean Outfall Flange-joint Replacement
CONTRACTOR: March Construction
CLIENT: Waimakariri District Council
VALUE: Not supplied

March Construction was contracted by the Waimakariri District Council during 2017 to replace the corroded fittings for two joints on an ocean sewer outfall pipe at Pines Beach near Kaiapoi, in North Canterbury.

The work presented a number of significant challenges for the contractor. These included the fact that the outfall could not be shut down for any length of time, and the joints to be replaced were at a depth of five metres below beach level and seven metres below high tide level.

March Construction showed innovation and expertise in dewatering and constructing multiply sheet pile walls to provide a 'dry hole' in which to carry out the work, rather than deploying divers.

This method, while different to that proposed by the client, provided a greater certainty of outcome, increased visibility

by working out of the sea, and increased the safety of the work team.

Reid bar connections between the adjacent walls were used to resist outward loading on the outer sheet piled walls of the 'dry hole compound.'

On exposing the outfall, it was found that its 900mm PE pipe was a thin-wall (SDR17) type, so the upmost care had to be taken not to rupture it during excavations and during the driving of piles.

To ensure this was mitigated the precise location of the outfall was found using air/water jetting spears.

It was also found that the joints in the pipe were not aligned, resulting in the joints beginning to separate due to head pressure within the pipe.

To overcome this, a bespoke clamping system was deployed that retained the pipe in its correct position, and allowed the removal and reinstatement of the backing rings and fittings without fear of a blowout.

Access was another challenge on this job, as this required traversing private farmland. Building a good relationship with the owner proved to be beneficial and a strict protocol was maintained throughout the construction period, whereby stock were not disturbed and gates were kept shut.

The work was completed safely, on time and budget, and most importantly met the requirements of the client. ●



Engineering acumen and innovation

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Hamilton Eastern Trunk Water Main Remedial
CONTRACTOR: Brian Perry Civil
CLIENT: Hamilton City Council
VALUE: Not supplied

Due to a 600 cubic metre section of river bank collapsing, Hamilton's eastern trunk water main and a valve chamber was under threat of falling into the Waikato River and cutting the supply of water to over 27,000 homes and businesses.

Brian Perry Civil (BPC) demonstrated both engineering acumen and innovation in addressing the emergency head on. Their remit was to secure and stabilise the river bank and mains pipe, repair the exposed and damaged valve chamber, and carry out remedial work.

To provide a safe engineering solution, the BPC team, along with design consultants BECA, carried out the following work:

- Construction of an access way to the slip face to allow heavy machinery, such as a 150 tonne crane, entry to the site.
- Excavation and bank securing by cutting batters that were then soil-nailed using 100, eight-metre long soil anchors and

then shotcreting with a 200mm layer of concrete down to water level.

- Securing the valve chamber by injecting a thick concrete pad beneath the foundations and into voids.
- Diverting the existing storm-water outlets away from the subsidence.
- Repairing the valve chamber and providing new access via an aerial gantry.
- Removing slip debris and a collapsed sheet-pile wall from the river bed and around the inlet, using specially equipped dive teams and a crane with a clamshell bucket.
- Constructing and placing stone-filled reno-mattresses in the river to help impede further erosion.

Due to the precarious and dangerous aspect of working above, and in, the swiftly flowing river required careful attention to safety measures. For instance, to mitigate this risk the soil nails were drilled from a caged platform suspended from a crane.

Other challenges included working with urgency on a sloping site during extreme weather events including several cyclones.

BPC and its subcontractors successfully delivered the interim emergency works within four weeks. Over the next eight months, the permanent emergency works were undertaken. ●



Objectives met and delivered

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Westgate Town Park
CONTRACTOR: Hawkins Construction / Downer NZ
CLIENT: Auckland Council
VALUE: \$3.8 million

The 1.1ha Westgate Town Park (Te Hauāuru Park) in West Auckland was a community-led project that required the design and construction of a modern public open space that is suitable for relaxation and the holding of community events, such as outdoor concerts.

Hawkins Construction was initially engaged to construct this facility, based on a design provided by the Isthmus Group. However, following the acquisition of Hawkins by the Downer Group the contract was seamlessly transitioned without delays.

To achieve the objectives stipulated by the client, robust controls and measures were put in place during the construction planning phase of the project. These objectives were all met and delivered in line with Downer's ISO accredited quality control system.

Because of the short time frame to complete the contract, work was carefully staged to allow overlapping activities, eg, the completion of concrete walls and associated paving etc was continued in tandem with adjacent earthworks, grassing and planting activity.

Innovative cost savings were achieved throughout the project due to the experience of the Hawkins/Downer team. For instance, construction tents were erected during periods of wet weather to enable the construction of footings and retaining walls to continue unimpeded.

Reliable and experienced sub-contractors were selected on merit and their proven performance to ensure the required quality work was achieved to the highest standard. They also had to work within the pre-qualification criteria set down by Downers.

A collaborative, open, communicative approach, and working as one team, across all disciplines was essential for the success of this project and ensure it was completed within the tight time frame and within budget.

The end result has provided a unique civic amenity adjacent to a shopping mall that is fully landscaped with walkways, a water fountain feature, plaza furniture, creative lighting, sandblasted motifs in the concrete, plantings, architecturally designed public facilities, and an electrical control room – all of which is integrated within the landscape of the park. ●



A sensitive engineering approach

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Puketirini Stream – Weir Upgrade
CONTRACTOR: Fulton Hogan
CLIENT: NIWA & Waikato District Council
VALUE: Not supplied

Fulton Hogan was commissioned by NIWA to upgrade a degraded small weir on the lower reaches of the Puketirini Stream, near Lake Puketirini west of Huntly.

The purpose of the weir is to provide a navigable passage for native fish species, such as rare eels and whitebait, so they can pass beyond the lower reaches of the stream, while providing a barrier for exotic fish species such as carp and perch.

The project required a sensitive engineering approach that would not unduly intrude on the natural environment during the course of construction.

Specification for the work was to remove and replace the existing weir with a structure that was of the same depth, width and height, so that a perfect and aesthetic 'tie-in' could be achieved with the stream bank and surrounds, while

allowing the same natural flow of the stream.

Prior to construction an environmental management plan was developed to ensure contaminants did not enter the stream, while sediment runoff was controlled and the native fish protected.

As there was no vehicle access to the site, a track had to be cut through vegetation from the nearest road and 'paved' with geofabric in the steeper wet areas to allow safe passage of vehicles and equipment.

To achieve a 'dry' working area at the site, Fulton Hogan's engineers chose to temporarily dam the stream and divert the water via gravity feed, lay-flat drainage hoses. While this proved successful, the dam required constant monitoring and maintenance with the addition of sand bags to stem any leakages.

It was determined that the failure of the old weir was due to hydrostatic forces eroding the concrete, so gabion baskets were placed at the base of the new weir to equalise the water pressure exerted on the concrete.

In constructing the new weir, and in close consultation with NIWA scientists, a rough, shotcreted and baffled contoured weir face finish was required that rounded off smoothly across the crest to provide a climbing surface for the native fish. The project was completed over a four week period in January 2018. ●



Minimising time and cost

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Waiiau Ferry Bluff Safety Barrier
CONTRACTOR: Isaac Construction
CLIENT: NZTA
VALUE: Not supplied

This project was located north of the Waiiau Ferry Bluff Bridge on SH7a, near Hanmer Springs. The objective was to improve safety by constructing barriers along a narrow section of road that runs alongside a sheer drop to the river.

The physical works entailed repairing a damaged crib wall, and constructing multiple gabion baskets, a concrete nib and guardrails.

This was carried out under a cost reimbursement basis with both client and the contractor sharing risk. The contractor faced a number of challenges that included:

- Limited survey data and only preliminary designs.
- Finding a solution for the retaining structure.
- Instituting a robust safety plan to protect staff/road users throughout construction.
- A tight timeframe.

• Work had to be carried out in conjunction with a cliff stabilisation project, which resulted in only a small team on site with a limited amount of machinery.

The contractor recognised the key for the success of the project and completing it within the timeframe was to take a flexible approach, engage in daily progress meetings, accommodate design changes, and ensure the project team were experienced, adaptable and able to work at height.

To overcome the issue of working at height, scaffolding was erected and this saved a lot of time while providing a safe working site.

Progress photographs and geotechnical data, including recommendations for improvements, were sent to the client regularly, enabling it to take a 'virtual tour' of the working site and access granular information and progress details.

Once excavation work began, Isaac's team realised the crib wall was repairable, so did not need to be replaced. Working closely with the designers, they altered the wall design from a replacement option to a repair option, reducing the project by two weeks, which saved both time and cost.

And Isaac's innovative approach to minimise time and cost was the key contributor to the project's success. By deploying a talented team who worked closely with designers, suppliers and sub-contractors, they were able to complete the project to a high standard under difficult circumstances. ●



Care and consideration

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Riccarton Bush Cycleway
CONTRACTOR: Isaac Construction
CLIENT: Christchurch City Council
VALUE: Not supplied

Riccarton Bush Cycleway runs through the heritage listed site of Christchurch's first settlement (Dean's homestead, cottage and gardens) alongside the Avon River and through a significant site of Te Ngāi Tuāhuriri Rūnanga. The area is a focus of cultural/social activities and is of historical significance.

For this reason the Riccarton Bush Trust, Christchurch City Council, and design consultants Velos were very cautious regarding consents and approvals for establishing a cycleway in the area.

Having been appointed contractor, Isaac Construction was also involved with the consents process and assisted with the design and pricing of the project.

A project of this size would normally indicate a 14-week programme of work, but Isaac Construction was asked to complete it within just eight weeks, which made the work

schedule extremely tight. However, as a result of Isaac's planning and time/project management skills, the project was completed in just six weeks, which also allowed the team to make improvements to a bus shelter close to the project.

Works involved the development of a shared path through Riccarton Bush, the installation of new fencing and gates, widening and upgrading the car park area, and building a vehicle access, which included installing traffic calming measures and new bike stands.

Isaac Construction 'self-performed' the majority of the work that involved four simultaneous work sites so as to meet the completion date. This involved four full-time construction crews, project management, chip seal and asphalt surfacing, geotechnical analysis, and traffic management.

The main subcontractors were Kriesel Contracting (supply and installation of all porous paving areas) and Arborlab (arborist services). Other parts of the project included landscaping, fencing and directional drilling.

Such was Isaac's attention to detail, working within the timeframe and delivering a cycleway that exceeded expectations, that it won the praise of the client, Riccarton Bush Trust, the nearby Riccarton House, the operators of the Christchurch Farmers Market and local residents and visitors who: "Sang our praises for the care and consideration shown for the environment and the quality of work." ●



Experience, skill and knowledge

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Great South Road SW Rehabilitation
CONTRACTOR: PipeWorks
CLIENT: Auckland City Council
VALUE: \$2 million

The **Great South Road** stormwater rehabilitation project was undertaken for the Auckland City Council by PipeWorks under the direction of engineering consultants Project Max.

In the semi-industrial area of Penrose, some 716 metres of old stormwater pipe of varying diameter was lined with a CIPP liner to prevent leakage and infiltration. It is believed to be the longest length of stormwater pipe using this method of rehabilitation in the country, with a 585 metre length of pipe in Morrinsville being the other longest stretch.

This particular project, which was completed in two stages during the latter part of 2016 and early 2017, was regarded as being very challenging as it presented a number of engineering demands outside the scope of usual pipe work rehabilitation. These challenges included:

- The large size of the 'host pipe' and infiltration at numerous

places along its length.

- Major damage to the host pipe that resulted in 10 percent ovality in one location.
- A restriction on manned entry to the pipe.
- The 'reconnection' of a number of lateral pipes.
- A reduction in the diameter of the pipe from 1200mm down to 1050mm.
- A section of the pipe had to be rehabilitated under the BOC Gases facility and, due to the inflammable nature of their work, special procedures had to be observed.

The key factors in completing this project to a high standard were:

- Anticipating and planning for the expected challenges.
- Utilisation of a remotely controlled robot within the lined pipe to cut the lateral openings.
- Ingenuity in overcoming the various pipe diameters by splicing the CIPP, which was a unique solution.
- Manufacturing, curing and installing the CIPP liner at various wall thicknesses within the pipe.

PipeWorks demonstrated experience, skill and knowledge to provide a solution for this complex project, and delivered a successful trenchless answer for the client that met all the requirements of the project.

This section of the Penrose stormwater pipe now provides a 50-year design life expectancy. ●



Fun and safe to play

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Wairoa Destination Playground
CONTRACTOR: Quality Roading & Services (Wairoa)
CLIENT: Wairoa District Council
VALUE: Not supplied

The **Wairoa Destination Playground** project was driven by the goal to provide both the Wairoa community and visitors alike with a fun and safe facility to gather and play.

The design required the construction of a playground that was about 3500 square metres in size, and built within a fully fenced area alongside the Wairoa River.

Prior to stripping the topsoil, 115-metres of 160mm diameter subsoil drainage was installed, ranging in depth from 600mm to 1000mm. The subsoil drainage was directed to a new sump which discharges into an existing storm water drain.

Approximately 3500 cubic metres of topsoil, which was removed in stages, was stripped to a depth of 100mm and stockpiled on the site. The stockpile was maintained to a maximum height of one metre and was compacted and

shaped to reduce dust. Silt fencing was also erected along the riverbank within the confines of the safety fencing to mitigate sediment and soil entering the waterway.

Fill was 'imported' to the site and compacted as it was placed and shaped using a 'sheep's-foot' roller, with the area where the flying fox was to be located built up to about four metres. Areas outside of this area were built up to 100mm - 500mm in depth and the moisture content monitored and tested using a nuclear densometer.

On completion, topsoil was placed where required and grass seed sown. The river side of the ground required for the flying fox also had Cirtex Sureflex GP1400 laid to help with grass stability and erosion protection.

Cushion Fall Bark was placed around the playground fall areas after the playground equipment was installed. Drainage consisted of filter fabric being placed over a 100mm base of pea metal draining into the subsoil drains.

Concrete paving was then constructed around the playground.

The location for the playground was initially a point of contention due to the potential flood risk at exceptionally high river levels.

However, the risk was mitigated to a large extent due to the construction design of the elevated flying fox area of the playground - creating in effect, a stop bank. ●



An excellent marine facility

CATEGORY 1B: Projects with a value of less than \$5 million (Company turnover greater than \$10 million)

PROJECT: Motuoapa Marina Development
CONTRACTOR: Seay Earthmovers
CLIENT: Department of Internal Affairs
VALUE: Not supplied

Seay Earthmovers was contracted by the DIA to assist in the transformation of a 50 year-old, aged marina facility at Motuoapa on Lake Taupo's south-eastern shore into a modern and functional marina capable of handling larger craft.

From the start, Seay Earthmovers showed innovation with a plan to dam and drain the marina basin prior to starting excavations. Traditionally this would have been done by dredging, however Seay's methodology paid off despite a temporary setback when the 'long-arm' of the old marina breached overnight allowing the basin to refill with lake water. Dividing the basin and draining the two sections independently overcame this setback and proved to be both effective and efficient as it allowed Seay's earthmoving machinery and the pier and mooring contractor to work in comparatively semi-dry conditions.

By using this method, it also prevented sediment and 'dirty water' entering the lake – an environmental plus.

Seay was also approached to install sheet piling for the interior marina wall and the entire 500-metre perimeter wall. This again provided an opportunity to be innovative and instead of complex tie-backs, Seay opted for a fully cantilevered sheet pile design for the interior wall that made better use of the space within the marina while ensuring the seismic requirements were adhered to. It also simplified construction and reduced cost.

Despite forecasts of the lake level dropping over summer, this did not eventuate and some tasks had to be carried out 'underwater' including the excavation of material from the lake bed to construct a reclaimed section of the marina.

Other work involved construction of a rock wall, access road and a carpark.

Throughout the 12 month project Seay demonstrated a need to be mindful of the local environment and positioned a floating silt curtain around the exterior of the site. Fish and bird life was, with the assistance of DOC and locals, either removed and rehoused, or worked around where this was practical.

The result is a modern, functional and well-designed facility that adds to the picturesque location, providing boaties, fishermen, locals and visitors with an excellent marine facility. ●



Innovative marine engineering

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: Thorndon Container Wharf Temporary Works
CONTRACTOR: HEB Construction
CLIENT: CentrePort Wellington
VALUE: \$19.2 million

CentrePort, including Thorndon Container Wharf in Wellington Harbour, is a busy and vital part of central New Zealand's logistic network.

The wharf is about 600 metres long and 25 metres wide and is used solely for container trade operations.

Following the Kaikoura Earthquake in 2016, the wharf and reclamation behind was severely damaged and was subsequently declared 'a destroyed asset'. The wharf structure had little ability to resist further gravity or earthquake loads, having moved laterally up to one metre in some places.

The ship-to-shore cranes could not be operated or moved along the wharf. Toppling of the cranes, toward the sea or backward onto the reclamation, posed a significant risk to any personnel or equipment in the vicinity.

The decision was made to return the wharf and the cranes to service on a temporary basis for a period of three years, with considerable urgency, as every day out of operation had a huge impact on regional and local commerce.

HEB Construction was selected as contractor to deliver the major temporary construction works and has built a strong reputation for constructing innovative marine engineering solutions for the Ports of Auckland, Tauranga, Napier, Nelson, Otago and the Chatham's.

HEB formed part of a highly focused and collaborative team together with the designers, port operations staff and other specialist contractors, each party selected on the basis of their expertise and capability to deliver extremely complex solutions in nine months, in the most challenging of conditions.

The port's container business was recovered to pre-earthquake levels within three months, with the wharf and STS cranes returning to service for container handling operations in mid-September 2017.

This project is an outstanding example of innovative design and construction within an immensely challenging and evolving operational environment.

Such is CentrePort's confidence in HEB that it has gone on to use the company for demolition of the redundant 300 metre length of Thorndon Container Wharf, a part demolition of Kings Wharf, and other small projects. ●



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Innovative construction method

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: Glen Eden Storage Tank and Sewer Upgrade
CONTRACTOR: McConnell Dowell
CLIENT: Watercare Services
VALUE: \$15 million

construct the tank using an innovative caisson (sunken shaft) construction method. This proposal and design was accepted and constructed under a NEC3 contract.

Construction of the concrete tank, which is 18.5 metres in diameter and almost four stories high required 970-cubic metres of concrete to build and was cast on top of a purpose-designed steel cutting shoe in three separate lifts. For each lift an excavator carefully undermined the cutting shoe, allowing the caisson to sink under its own weight, taking three-and-half months to sink to its final resting place 14-metres below ground.

Approximately 2500 cubic-metres of earth was removed from inside the caisson and 1.6kms of associated pipework installed.

During construction, 750 tonnes of downward force was exerted on the steel cutting shoe from the weight of the concrete and required 55,000 litres of bentonite lubricant to reduce the friction between the caisson and the ground.

With reinstatement completed, all that can be seen are four manhole covers and an electrical unit in the carpark.

In delivering the project, McConnell Dowell developed and advanced the detailed design and made subsequent adjustments to the construction method, resulting in a successful installation and delivery of a first-class wastewater storage asset. ●

Due to the increasing population of Auckland, Watercare Services required extra capacity for wastewater storage in West Auckland.

Watercare contracted McConnell Dowell to construct a two-million litre capacity storage tank in Glen Eden, West Auckland. The tank and pipelines were to be designed to reduce the frequency of wet weather overflows into the environment.

The preferred storage tank location was at Harold Moody Reserve carpark. However, due to the high recreational value of this site, Watercare undertook extensive consultation during the design and consenting phase to minimise the impact of the construction on the community.

In recognition of this objective, during the tender phase, McConnell Dowell identified an alternative proposal to



Careful planning and focus

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: Waikato WTP 175MLD Upgrade
CONTRACTOR: Brian Perry Civil
CLIENT: Watercare Services, Auckland
VALUE: \$13.4 million

Watercare's Waikato Water Treatment Plant is located in Tuakau where water is taken from the Waikato River, treated and then pumped into Auckland's water supply network. The previous capacity of the plant was 150ML/day.

In late 2015 Watercare decided to increase the capacity of the plant to 175MLD.

This involved :

- Constructing a new 27m long concrete clarifier structure and the mechanical fit-out of the structure with Suez clarifier equipment. This required the excavation of 22,000m³ of material from the hillside adjacent to the existing clarifiers and the construction of a temporary retaining wall.
- Constructing three new 11m long concrete membrane tanks inside the existing membrane building.
- Fit-out of membrane tanks and associated pipework.

- Open cut installation of new off-spec drainage pipeline to existing off-spec line – 675mm concrete pipe, 4-5m deep.

Late in 2016 the Brian Perry Civil team, approached by the client, negotiated a design and build contract with Watercare for the upgrade, on the back of completing several previous successful projects at the treatment plant.

Brownfields construction is always a challenge, but working in and around an operational plant producing drinking water for 25 percent of Auckland's population brings unique challenges.

At all stages, any activity had to be assessed for any risks it would have on the operational plant and the quality of the water produced.

Other challenges included cutting into the operational plant at the inlet pipes and outlet channels that could only be done during tight windows. The site team also had to work directly under high voltage power lines that tended to dip when the demand for power was greater.

However, throughout the works there were no incidents that put the water supply quality at risk, which is testament to the careful planning and focus of the site team and collaboration with the client.

The finished project has been described as very successful by both Watercare and the contractor delivery team. An excellent example of collaborative working, this model is likely to be repeated on that basis, says BPC. ●



BREN DYER PHOTOGRAPHY

An iconic structure

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: New Brighton Pier – structural strengthening
CONTRACTOR: Fulton Hogan
CLIENT: Christchurch City Council
VALUE: \$7 million

At 300 metres, an iconic structure in the heart of New Brighton in Christchurch, is the largest concrete pier structure in the southern hemisphere.

In 2010 and 2011 the pier suffered earthquake damage that, without repairs, would have significantly shortened its intended lifespan.

Christchurch City Council, with support from WSP Opus, developed a concrete filled jacketing solution to be installed around the structure's plastic hinge zones. These jackets span five metres and are located at, or below, the seabed. This, in combination with a 'dynamic' surf environment, presented a number of unique challenges to the project.

Christchurch City Council put the project out for tender and Fulton Hogan's solution used a cofferdam caisson installed via a temporary gantry system supported through the pier

structure segments to create a dry and safe work environment for the workers. The solution also provided the client with transparency around the extent of damage to the hinge zones.

As the pier remained open for the duration of the contract, Fulton Hogan worked collaboratively with stakeholders to manage closures for critical work. The ultimate success of the project was due to strong planning and consideration of health and safety risks for all construction works including:

- Installation of the temporary through-road and crane pad.
- Installation of the triangular turning bridge allowing HV access onto the pier.
- Temporary gantry beam installation to support the installation of the cofferdam caisson sections.
- Cofferdam caisson set-ups – constructed in 2.4m sections with the largest six sections 14.4m high.
- Cleaning of the affected hinge zone.
- Break out of spalled loose concrete.
- Priming the affected area with Sika 910N primer.
- Supplying and installing 5m long, 25mm thick pile jacket coated with an Interzone 954 fiberglass epoxy coating.
- Casting the jacket in situ using a 60Mpa self-compacting grout.

A Project Management Plan ensured all the team understood the way the project was to be delivered in order to meet the Council's objectives and expectations. ●



Design-and-Construct contract

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: Grove Road Box Culvert and Associated Assets
CONTRACTOR: HEB Construction
CLIENT: Auckland City Council
VALUE: \$15 million

The demand for affordable housing in Auckland has reached unprecedented levels.

The Grove Road Box Culvert is a perfect example where HEB Construction offered a unique contracting solution that allowed both central and local Governments to collaboratively work together to fast track development for private and social housing.

The McLennan Housing Development is a 560-house development that HEB is constructing on very flat peat land on the outskirts of Papakura, that also includes the first of the KiwiBuild homes currently under construction.

A 3.5m x 2.5m box culvert was required as part of the Takanini storm water conveyance channel (renamed the Awakeri Wetlands) to provide flood resilience to the Takanini Special Housing Area, with the route passing through the McLennan

Housing Development.

The box culvert is a key piece of infrastructure, and the challenge was to construct the box culvert and the subdivision at the same time to deliver to the market as fast as possible.

There was high risk in terms of safety, access, cost and delays posed by separate contractors using the same shared space. The solution was simple; find one contractor to complete both contracts simultaneously. And HEB Construction offered a unique service simultaneously constructing critical infrastructure in parallel with land development; leading to a fast project delivery.

It soon became apparent that the proposed design could be improved to better mitigate the risks with the poor ground conditions. And part way through the tender process HEB was asked to carry out a design and convert the contract from Construct only, to a Design and Construct contract; a challenge HEB embraced.

The project involved the construction of an in situ post-tensioned reinforced concrete box culvert 3.5m x 2.5m in cross-section, 420 metres long, and constructed in challenging saturated peat ground conditions (up to 40 metres in depth and with 5kPa bearing capacity).

The culvert was constructed in a sheet piled trench via a cut and cover approach with the base of the excavation ranging between five metres and eight metres below ground level. ●



A highly sensitive project

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: Southern Pipeline – Matapihi to Te Maunga
CONTRACTOR: HEB Construction
CLIENT: Tauranga City Council
VALUE: \$13.2 million

HEB Construction was head contractor for this major wastewater reticulation project to construct a six kilometre long x 800mm diameter high density polyethylene (DN800 PE100) trunk sewer pipeline, at depths of up to six metres from the harbour end of Matapihi Road in Matapihi to the Te Maunga Wastewater Treatment Plant.

The pressure main and ancillaries had to be constructed through a road, farmland, wetland, and under a state highway and the East Coast main railway track. The route also traversed a number of environmentally, archaeologically and culturally sensitive areas.

Works within the road reserve on the Matapihi peninsula had an extra challenge as it is serviced by a single road that had to be kept open at all times for local traffic and emergency vehicles.

Works included:
 • Associated valve chambers and discharge treatment devices.

- Site clearance works.
- Temporary works (culverts, access tracks, trench shoring, sheet piling).
- Reconstruction of 1.3km of kerb and channel and carriageway in Matapihi including widening, overlay and cement stabilisation.

The project was high-profile, complex and technically challenging and included working in tidal and estuarine environments, bulk earthworks, temporary works, culvert installation, road construction, and working to multiple consents, and all within a highly visible and culturally sensitive site.

HEB says this was a highly sensitive, public profile project and communication and proactive stakeholder management was prioritised.

These proactive collaborative relationships helped TCC and HEB resolve some initial resistance and negativity from within the local community, it says.

“The TCC wanted a top-class contract delivered and that is what we believe we delivered. This project helped HEB build on our already strong working relationship with Tauranga City Council and believe the client’s satisfaction with our service is evidenced by the additional works awarded.”

On the basis of their performance on the original contracted project works HEB was awarded two variations to extend their commission. ●



Smart programming

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: Rapanui to Shag Rock Cycleway
CONTRACTOR: Higgins Contractors
CLIENT: Christchurch City Council
VALUE: \$6 million

The Rapanui to Shag Rock Cycleway, part of Christchurch City Council’s Major Cycleway Routes, opened back in December 2017.

Working in partnership with the Christchurch Council, Higgins has contributed to the city’s alternative transport options by delivering a 2.4 kilometre cycleway.

The cycleway required staging and sequencing of works to ensure the least amount of impact on the travelling public, as the project covered around 10 major residential and business areas across 10 active intersections.

At tender, the job was planned in seven main stages and broken down into three to four sub-stages that overlapped, or interrelated, largely to maintain access and reduce disruption for residents, pedestrians and business customers.

Smart programming was used to insert stakeholder

requirements early in the construction that, at times, resulted in productivity inefficiencies but allowed for the community to carry on business as usual as much as possible.

Managing quality risk had its own complexity with a redesign of 75 percent of the drainage part after the project started. This meant dealing with deeper dig-outs and more water treatments than expected, or were designed for, to ensure there was no need for service relocation, or future replacement due to the misalignment of levels underground.

A key deliverable was the installation of new stormwater drainage, as a significant piece of infrastructure in the city’s rebuild. This involved a multitude of known and unknown underground services to work around that required close collaboration with utility and telecommunication providers as much of the as-built information was either inaccurate or missing. Surveying services allowed Higgins to assist the council to update its as-built information for all services along this 2.4km route and also resulted in a detailed review of the stormwater design.

Higgins says it was imperative during the project to reduce or eliminate any disruption to the community by keeping the lights on, the water flowing, and the traffic moving.

This aspect and the quality of the delivered asset was acknowledged widely at the opening ceremony by local and central Government officials and local users. ●



Successful fast tracking

CATEGORY 2: Projects with a value of between \$5 million and \$20 million

PROJECT: Alternate Route Widening of SH65
CONTRACTOR: JCL Asphalt
CLIENT: Fulton Hogan for NZTA
VALUE: \$7.35 million

Following the Kaikoura earthquake, the inland route became the only road link between Christchurch and Picton. Traffic volumes increased dramatically, with disastrous consequences as the narrow road was never intended to carry such high volumes of heavy vehicles. As a result work to widen the route became a priority for the NZTA.

The scope of the project was initially to complete the widening of a five kilometre section of SH65 from Murchison. However given JCL's efficiencies and quality work, the scope of the project was extended to cover a further 80km towards St Arnaud and Blenheim and this was achieved over a 10 month period.

The contract was for the construction of extensions to the road shoulder at specific locations as predetermined by the Transport Agency, with the targeted areas being corners, along with straight stretches that were too narrow to safely

accommodate large vehicles.

Improvements consisted of laying a 600mm wide strip along the edge of the roadway comprising a 50mm asphalt overlay with an AP40 base-course. These improvements were accomplished in 500 to 600-metre sections each day and included JCL taking responsibility for traffic management and preparation of each section being widened, including marking out, milling out old material, laying and compaction of base-course.

JCL was innovative in a number of ways, but perhaps the most notable being a purpose-built piece of equipment that, after testing and refinement, became the enabler of a highly successful method for fast tracking the widening work. It also achieved a quality of repair which far exceeded the Transport Agency's expectations. This innovation is now being used by multiple contractors undertaking widening contracts.

As this part of New Zealand can experience 'four seasons in one day', and is fairly remote, it posed difficulties – both for the crew and for the technical aspects of prepping and sealing. To address the heat/cold, all crew were issued with fit-for-purpose PPE gear, including heavy duty gloves and full cover overalls. Packed lunches were also provided every day.

Extreme care was taken to ensure waterways were not negatively impacted with excess material removed. Work was also avoided during periods of heavy rainfall to eliminate run-off. ●



All weather access

CATEGORY 3: Projects with a value of between \$20 million and \$100 million

PROJECT: Waitangi Wharf Upgrade, Chatham Islands
CONTRACTOR: Downer NZ / HEB Construction
CLIENT: NZ Department of Internal Affairs
VALUE: \$55 million

Due to the poor structural condition of the old cargo wharf on the Chatham Islands at Waitangi, and in order for the facility to handle an increasing amount of imports/exports in coming years, a decision was made to replace it with a new wharf, a breakwater and much improved cargo handling facilities.

Downer and HEB Construction along with Tonkin & Taylor, AECOM and NZTA, in a joint alliance, were appointed by the client, the NZ Department of Internal Affairs to design, secure consents and construct the new wharf and additional facilities.

Construction involved overcoming many logistical challenges that were unique to the project, not least of which was the fact that the Chatham's are some 800kms from the mainland of New Zealand, has very few building resources or skilled workers, experiences wild unpredictable weather, and is reliant on New Zealand for the supply of fuel and food

supplies, and has poor lines of communication.

Highlights of the work that demonstrated the alliance's creativity, resilience, and its determination under such circumstances included:

- Managing the logistics of bringing personnel, equipment and building materials to the island on a 1500 tonne sea-going barge that made five arduous return trips between the mainland of NZ and the island.
- Developing a quarry and a concrete batching plant on the island for sourcing aggregate and manufacturing concrete. Setting up a precast facility for the manufacture of 3300 Xbloc armour units for the 180-metre long breakwater .
- Constructing a 165m-long, piled and concrete wharf wall and infilling with 100,000 cubic metres of locally quarried basalt rock while the old wharf continued to be fully operational.
- Pouring the concrete wharf deck to a depth of 300mm over a period of eight months, as this could only be done in favourable weather conditions.
- Contributing to the community by way of building a boat ramp, dredging the harbour and building a professional relationship by keeping them informed of progress.

The Chatham Islands now has a larger and safer port with a much improved cargo, fish, and livestock handling facility able to be accessed by shipping in even the harshest weather and tidal conditions. ●



Safety given highest priority

CATEGORY 3: Projects with a value of between \$20 million and \$100 million

PROJECT: Fergusson FN Berth
CONTRACTOR: Brian Perry Civil
CLIENT: Ports of Auckland
VALUE: Not supplied

The **Fergusson FN** berth is a 296 metre long facility constructed in just under two years. It is located on the north-eastern perimeter of the Auckland CBD and extends into the Waitemata Harbour, providing for growth in cargo handling and berthing extra-large container ships.

It is the largest wharf built in New Zealand over the past 15 years and due to its size and exposure to the marine environment presented a number of challenges.

Construction was carried out in a linear-like, programmed sequence along a critical path.

Work included:

- Installation of 284 marine bored piles.
- 300 metres of precast retaining wall.
- 35,000 cubic metres of rock revetment.
- 10,000 square metres of 700mm to 1850mm wharf decking.

- 18 super-crane fenders.
- 600 metres of crane railing (longest ever installed in NZ).
- Services and utilities installed beneath the deck.
- Construction of a marine dolphin.

The piles were first installed then the retaining wall constructed. The rock revetment was completed off temporary staging with the rock butting against the retaining wall. The deck was then laid, supported on the piles and the retaining wall. Reclamation and backfill was then placed between the land and the new wharf, and fenders and crane railing installed along the deck, with services mounted beneath.

Due to the piling sequence hitting hard rock, coring was required, causing delays to the programme. To mitigate this, a number of innovations and efficiencies were introduced by BPC to bring the project back on schedule. This included constructing modular cantilevered staging in order to position the drill rig close to the piles allowing it to complete two piles per movement.

Likewise, due to the depth and current of the sea, the installation of geofabric for the rock revetment base, which is usually carried out by dive teams but deemed too risky in this instance, was placed by building large steel frames over which geofabric was stretched and lowered into position on the seabed by crane. This greatly increased speed of installation and reduced safety risks. ●



Robust health & safety management

CATEGORY 3: Projects with a value of between \$20 million and \$100 million

PROJECT: SH2-58 Haywards Interchange
CONTRACTOR: Downer NZ
CLIENT: NZTA
VALUE: \$44.5 million

The **SH2/58 Haywards Interchange** is the largest road project to be undertaken in the Hutt Valley for some considerable time. Straddling the SH2 motorway, it has since opening improved traffic efficiency, safety and accessibility for motorists, cyclists and pedestrians.

Designed by Aurecon and Tonkin & Taylor, the grade separated interchange was constructed by Downer NZ in just over two years. It required replacing the signalised former intersection, realigning a short section of SH58 and the connecting side roads, constructing two traffic bridges and a pedestrian overbridge, building a park-and-ride carpark, diversion of several streams, and the creation of four pedestrian walkways and cycleways with underpasses.

Due to the proximity of the electrified railway corridor and working above SH2 (40,000 vehicles per day) required a

robust health and safety management plan. This has resulted in the project being presented with the 2018 John Carson Memorial Award.

The most significant and visual aspect of the project, along with what has been called 'the prettiest stretch of motorway in the country', are the two traffic bridges that form the oval and elevated roundabout, which is connected by the on/off ramps from SH2 and 58, the side roads and the park-and-ride facility. These bridges were constructed using five, 32-metre-long, 75 tonne, Super-T beams sitting on 'bank seats' of reinforced earth abutments.

The third, four-span bridge which crosses both the motorway and the railway-line, provides a connection for pedestrians from the nearby Manor Park Railway Station to the 40 car park-and-ride facility.

The interchange is the first in NZ to be constructed with designated cycleways with underpasses that allow both pedestrians and cyclists to safely cross under two busy state highways. It is also the first section of highway to be paved using high modulus asphalt EME, of which Downer is the sole manufacturer of this product in NZ.

"Through Downer's application of robust management, health and safety and quality construction controls, this project achieved key milestones and objectives which given the time-frame and site difficulties, is an excellent outcome." [NZTA] ●



Groundbreaking in every sense

CATEGORY 3: Projects with a value of between \$20 million and \$100 million

PROJECT: Pukekohe Main Trunk Sewer
CONTRACTOR: Fulton Hogan
CLIENT: Watercare Services
VALUE: \$39 million

Ground-breaking in every sense, the Pukekohe Main Trunk Sewer project is a story of innovation, relationships and sustainability.

This project involved the upgrade of the main trunk sewer to sustain the fast-growing South Auckland communities around Pukekohe. Included in the work was the design and construction of a new pumping station, installation of a new sewer pipeline (incorporating a rising main), together with an additional local pumping station and rising main to service the Bucklands Beach area, and a temporary high flow diversion at the wastewater treatment plant.

Working within a tight time framework, the project presented a number of challenges including:

- The undulating topography and encounters with rock during directional drilling called for some redesign.

- Interfacing with the existing infrastructure.
- Over five kilometres of pipe that had to be installed as open-cut works within the road reserve.
- Liaising and working with two different councils, as the sewer traversed areas under their jurisdiction.

In conjunction with BECA, Fulton Hogan was able to fast-track the design and construction programme, both of which were carried out in parallel, so that works could proceed unimpeded. This allowed the project to be completed from design through to commissioning within two-years – “a real game changer.”

Innovative thinking by the contractor provided value for money, reduced whole-of-life maintenance costs, mitigated environmental risk and significantly reduced the impact of the construction on the local community.

The main hydraulic challenge was the downhill topography, which rose over the first four kilometres but then dropped steeply down to the treatment plant. This was overcome by using a combination of mechanical control valves (pinch valves), a series of static head-loss valves, followed by a 10-metre lift tower to provide constant back pressure.

The satisfied client congratulated Fulton Hogan on; “Going above and beyond their expectations in delivering an innovative, technically challenging project in a tightly condensed timeframe, while at the same time maintaining excellent community relations.” ●

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Congratulations, from all the team at Z.





Value added innovation

CATEGORY 4: Projects with a value greater than \$100 million

PROJECT: Mangere BNR Upgrade
CONTRACTOR: McConnell Dowell / HEB Construction JV
CLIENT: Watercare Services
VALUE: \$140 million

Expansion of Auckland's main wastewater treatment plant at Mangere was required to cater for ongoing population growth and was the largest single-site, wastewater infrastructure project undertaken in New Zealand since 2000.

The international design team, led by CH2M BECA provided over 40,000 man-hours in design/procurement, with the JV construction team of near 2000 providing 830,000 man-hours.

The project took over two-and-a-half years to complete and involved complex engineering for the construction of a biological nutrient removal (BNR) facility adjacent to the existing wastewater plant which, on commissioning, is capable of treating wastewater from a quarter-of-a-million people.

The JV and subcontractors provided all the earthworks and excavations in ground conditions (the site had previously been a rubbish dump), dewatering using large pumps, concrete

foundation work, construction of a master pump station, installation of state-of-the-art blowers, a 14-metre high flow splitter box, two 4-stage Bardenpho odour control bio-reactors, two 52-metre diameter clarifiers, an aeration and ethanol dosing facility, two process pump stations, an inter-stage pump, drainage pumps, and considerable pipe work and tie-ins to the existing plant.

Connecting pipework from the new facility to the existing outlet channel crossed three intercepting sewer pipes, including the fuel line to Auckland International Airport and a pipeline that carried 50-percent of the city's treated effluent, which necessitated the upmost care during earthworks and required building a gantry over them and suspending the new pipe below it.

The JV partners completed all the mechanical installations, the pipework, pump house construction, and steel structures (including fabrication of stainless-steel componentry). A specialist sub-contractor, UGL, completed the electrical work, which involved over 92kms of cabling, installation of AV reticulation, and 100 electrical motors.

Designed and tendered as a NEC3 contract, the project delivery went beyond the technical excellence required by the client. The JV team worked in a collaborative manner to enhance the project, manage risk, and provide alternative solutions in a culture driven by an ethos of – "Together Doing it Better." ●



Stunning visual impact

CATEGORY 4: Projects with a value greater than \$100 million

PROJECT: SH1/Russley Road Upgrade
CONTRACTOR: McConnell Dowell /Downer NZ JV
CLIENT: NZTA
VALUE: \$112 million

The SH1/Russley Road Upgrade at the intersection with Memorial Avenue was a complex and high profile project that provided an exciting design and construction challenge around one of the busiest intersections on the state highway network.

Adjacent to Christchurch International Airport, the key features of the project include the award-winning 15-metre-long Harewood Underpass, the Southern Airport Access, the Harewood Road Roundabout and the centrepiece of the project – the Gateway Memorial Avenue flyover and archway structure. All are examples of excellent urban design and considered aesthetic detailing.

The flyover and 'four-legged' archway, captures the dynamism and excitement of land/air travel while recognising the unique airport location. The arch curves gracefully 27-metres above ground-level, crossing above the carriageway and comprises

30 sections of structural steel weighing 400 tonnes sitting on concrete foundations.

The state highway was itself widened along a 3.5km section as a part of the project and includes iconic features that juxtapose context, composition and function to provide a unique welcome to airport visitors by providing a sense of place and safe passage from the airport precinct.

The complexity of design and construction of these structures in a live traffic environment was a key focus for the construction team and well-considered traffic management solutions kept traffic, pedestrians and cyclists moving safely and efficiently during the construction period of just over three years. With an estimated 33,000 vehicles per day using Russley Road and key stakeholders such as Christchurch International Airport and airlines requiring minimal delays for passengers, the project team worked tirelessly to deliver.

Innovation in challenging value-added engineering, optimal design/construction solutions, risk management and traffic management coupled with effective communications and stakeholder buy-in enabled the project to be completed eight months ahead of schedule and close to budget.

The resulting four-lane highway and structures has provided a great outcome. It has achieved its purpose of reducing congestion, improving travel times and safety, while providing a stunning visual impact along the western state highway corridor. ●



Passionate about making a difference

CATEGORY 5: Excellence in the maintenance & management of assets, including routine maintenance

PROJECT: Tasman District Rivers Maintenance

CONTRACTOR: Taylors Contracting

CLIENT: Tasman District Council

VALUE: Not supplied

In 2016, **Taylors Contracting** was awarded the three-year contract to manage all maintenance activities for the 'rated rivers' across the Tasman District.

Keeping on top of 285 kilometres of rivers stretching from Golden Bay to Richmond and everywhere in between is a constant challenge for the contractor.

For the past seven years, Taylors Contracting has held the Rivers Maintenance Contract for Tasman District Council, undertaking a range of activities to help maintain quality river control and flood protection schemes to protect communities and mitigate damage to properties and livelihoods in the region.

Managing changes in land use, scheduling work to meet the requirements of individual landowners, their farming activities and the breeding cycles of fish and bird life, not to mention responding to extreme weather events, requires expert planning, in-depth local knowledge and outstanding stakeholder and client relationship skills.

Taylors' Rivers team is also passionate about delivering the improvements and maintenance that provides positive outcomes for the ecology of our rivers.

"This, and commitment to new technology and innovation,

the highest health and safety and quality standards and the pride and enthusiasm we bring every day to the work we do is what makes the team stand out.

"Despite every challenge thrown at us, we get the job done. Anglers, bird enthusiasts, Tasman District Council and locals agree that Tasman's rivers have never looked better."

And at a time when the health of our rivers is a hot topic of discussion, it is encouraging to know that one contracting company in the Tasman region is passionate about making a difference.

Led by CEO Charlie Taylor, and contracts manager Arnie Richards, Taylors' Rivers team says; "This, and our commitment to invest in new technology and innovation, a focus on meeting the highest health and safety and quality standards, and the pride and enthusiasm we bring every day to the work we do is what makes us stand out. ●





Outstanding achievements within the civil construction industry

The **Z People Awards** were developed by **Civil Contractors NZ**, with support and sponsorship from **Z**, to recognise the outstanding achievements of individuals within the civil construction industry.

Quintin Rolston **Z People Award – Emerging Leader** Construction Manager, Isaac Construction

Moving to Christchurch in 2009 for University, Quinton graduated with both a BE Hons (Civil) and BCom (Finance) in 2014, and started at Isaac Construction as a junior engineer in 2013. Within a year he was promoted to project manager, and two years later awarded the role of construction manager.

“Over the past four and a half years, I have progressed through the company from leading several small teams on moderate projects, through to now leading the construction and traffic management divisions of Isaac’s, encompassing 21 junior to senior engineering, project management, department managers, and surveyors, who then lead 115 construction staff, and 50 traffic

management staff.

“My current role is in leading my team to consistently win and deliver approximately half of the value of the company’s total annual turnover.”

A challenge Quintin says he was presented with early in his role as construction manager, was to face a quiet winter in 2016,” he says.

“I picked up the Tenderlink email describing the Major Cycle Route (MCR) programme of works offered by Christchurch City Council, and I knew that there was a niche here where we could really excel.

“We have since delivered about \$12 million worth of work through this panel, with another five plus years of work left to go. ●



Z People Award
EMERGING LEADER
WINNER

Olga Joensuu **Z People Award – Emerging Leader** Project Engineer, Brian Perry Civil

Olga has six years’ experience in complex and challenging projects both in Finland and New Zealand and takes pride in delivering quality workmanship and ensures health and safety protocols are implemented successfully. Her combination of excellent communication skills and very high standards are beneficial in all the work she delivers.

“From my experience, I’ve found that to be a great leader in any construction field, everything revolves around good communication. I actively encourage my team to communicate openly by brainstorming, sharing their opinions and delivering feedback,” she says.

“When allocating tasks, it is important to be able to recognise your team’s strengths and weaknesses,

including your own. I really enjoy this part of being a leader as I find it rewarding to identify the talents of my team and to nurture their abilities in a productive and stimulating work environment.

“One of my biggest challenges has been my relocation to Kaikoura. I relocated to work as part of the North Canterbury Transport Infrastructure Recovery (NCTIR). There was huge pressure and drive to get State Highway 1 open for the public and local community before Christmas.

“The success of our team has gained us respect from the NCTIR Alliance and helped us secure our next project. Also as a result of this success I was seconded from Brian Perry Civil to NCTIR and promoted to project engineer.” ●



Z People Award
EMERGING LEADER
RUNNER UP

Gareth Bruce **Z People Award – Emerging Leader** Queenstown and Commercial Manager, Faulks Investments

Gareth was the chair of the Canterbury Branch of Civil Contractors over the past two years and at Faulks Investments (which has around 30 staff in Christchurch and 10 staff in Queenstown) he is the 2IC reporting to the general manager. In Queenstown he oversees the project and operations managers and operational staff.

“My role requires a lot of multi-tasking. I am concurrently involved in: developing and implementing our overall business strategy; business and client development, tendering for both branches; financial and contract management for both branches; and managing any conflicts or

serious project issues that are escalated up to me by our project managers,” he says.

The company has always operated a high-performance culture, he says, as this is a key part of our branding for being known for the highest level of both quality in work and quality in service delivery.

“This requires a high level of staff engagement.

“I would describe myself as a democratic leader, I always try to include staff in the decision-making process so that they remain engaged, gain experience and learn. When time constraints require a more autocratic approach I always try to explain the decision to staff afterwards.” ●



Z People Award
EMERGING LEADER
RUNNER UP

Jake Alderson **Z People Award – Training Development** Foreman, Higgins Contractors

Completion of Higgins’ ‘Step Up’ leadership programme was the latest accomplishment stemming from the passion and hard work Jake has put in to developing his career pathway in the civil construction industry.

“With Higgins’ support, I completed the Young Fellas Camp, the ‘Step Up’ leadership programme, obtained my operator licences and two New Zealand Certificates through Connexis, in Infrastructure Works level 2 and in Plant and Equipment level 3,” he says.

“My father was always in the roading business and I essentially grew up in this environment which greatly influenced me.”

Not long into his employment with Higgins, Jake saw an opportunity for a great career in civil construction and has pursued every opportunity that presented itself.

“During the Southern Corridor Improvements project, other programme delays led to my team having to complete a high-pressure section of critical path works within one week. This included the construction of pavement from subgrade up to base-course, placement of approximately 3000

tonnes of aggregate, managing crews and adjusting the programme in order to get the job completed.”

There was significant pressure for his team to meet the constrained timeframe to allow for traffic to be switched to a new alignment so that work on bridge removal and replacement on the opposite side of the motorway could commence, he adds.

“The work conditions were challenging and it often required me to jump on various pieces of equipment to help relieve team pressures. We delivered beyond our client’s, and our own, expectations. Being recognised by the business as a future leader worthy of investment confirmed my decision to follow a career path in the civil trades. Starting with Higgins in 2011 as a labourer at the age of 16, seven years on I work as a foreman managing several delivery teams.

“Higgins confidence in me saw my appointment to run the on-site operations for Auckland’s Southern Corridor Improvements Project. Working for a company that mentors, trains and trusts its people to self-manage major projects reflects how a company can take people like me from good to great.” ●



Z People Award
Training Development
WINNER

Rafe Bjork **Z People Award – Training Development** Isaac Construction

Rafe has been employed by Isaac Construction for the past 4.5 years, joining when he was 19.

“As soon as I realised I wanted a career in civil construction, I asked to do the National Certificate in Infrastructure [Level 2]. That was the start of my training path. As I’ve completed each qualification, I’ve looked ahead for my next challenge,” he says.

“After completing Level 2 certification, my next milestone was completing the Level 3 National Certificate in Infrastructure Works Excavation and Reinstatement.

“While studying for this qualification I realised I wanted a career in drainage, and moved into a drainage crew.

“After about six months I got the opportunity to start my National Certificate in Drainlaying [Level 4], which I am nearly finished.

“Within the next three years I intend to achieve Certifying Drainlayer and be promoted to the role of foreman. My goal is to be supervisor by the time I’m 40.”

His first challenge, he recalls, was starting work

at Isaac with no driver’s licence and biking 11km to his first day on the job on a BMX.

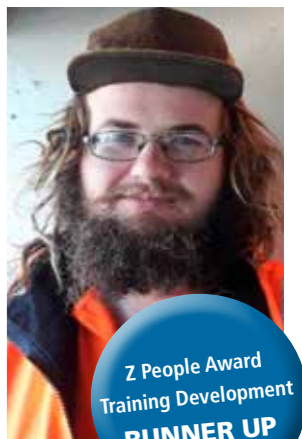
“I really wanted the job!” He says.

Paired with an excellent mentor, he found a lot of opportunities to undertake training. “I decided to participate in whatever training I could, and I’ve never looked back.

“Now I really want to progress within the company and the industry. Training and development is the best way to do this, so I’m committed to an ongoing training path. To do this, I’ve worked with Isaac’s Training & Development manager to put a plan into action.”

He belongs to an Isaac’s study group. “This means I am supported by my colleagues and the study group facilitator, and this keeps me progressing.

“The fact my employer supports me with dedicated work time to study, has also been a huge help to my progress. Their approach is that if you want to do something beneficial for yourself, you get all the support you need.” ●



Z People Award
Training Development
RUNNER UP

Building business through people

The CCNZ Company Training Development Awards, sponsored by Connexis, aim to recognise those employers that believe in providing opportunities for their staff to gain skills and knowledge through a nationally recognised qualification.

These employers invest across all levels of their business,

embedding training as a matter of course in everything they do, and creating pathways for their people to move up. They understand the importance of building their business by building their people.

This award is to highlight the importance of these types of companies in creating a skilled and safe nation.

People our biggest asset Connexis Award: Turnover \$100 million plus



Fulton Hogan Bay of Plenty consists of a number of complementary services like construction, surfacing, drainage, quarries, transport, bitumen/emulsion manufacture, civil works, traffic management, laboratory services, hydro-excavation, surveying and maintenance.

It has a skilled workforce of over 180 and the company recognises their commitment, strengths and achievements by empowering all of them through opportunities for career growth, professional and personal development, while recognising the ageing demographic of its workforce, access

to critical skills across the industry, and the difficulty to attract young people into the industry and retaining them for succession.

FHBOP is invested and committed to promoting civil construction career pathways with local communities by providing opportunities to enter the industry through an entry level, earn-as-you-learn Cadetship Programme.

"Our People are our biggest asset, and by investing in them, we encourage their development so their career and prospects advance with us as we grow," it says. ●



Leader in innovation

Connexis Award: Turnover \$100 million plus

Higgins Contractors currently employs over 1700 staff across New Zealand and Fiji. About 43 percent of its staff are completing some form of training. This includes qualifications, compliance training and in-house development programmes.

For staff involved with construction and operations, Higgins provides training for all the roles within the civil trades group. This starts with labourers and includes a wide range of plant operators.

Unique is the company's 'boot camps,' including its Young Fellas Camp in Rotorua.

"The leading innovation for 2017/18 has been the development and rapid roll out of the Operator Boot Camps and Project Engineers Boot Camps," it says.

Higgins has also developed a tool to help orientate staff into the company. "It's a process that helps train staff to operate in our construction environment and helps identify future training needs. By mid-2018, staff progress to-date towards the 90 Day Passport will be transitioned to a new programme called the Higgins Passport." ●



Built on respect

Connexis Award: Turnover \$100 million plus

Fulton Hogan Christchurch has been creating infrastructure for Kiwis for 85 years; built on respect, safety and teamwork.

"At Fulton Hogan we often work in inherently hazardous environments, but safety always comes first," it says. "We challenge and train our people to look after themselves and their team-mates, guided every day by our three safety questions: what am I doing, what could go wrong, and how can I make it safe."

"Increasingly, we are acknowledging people's preference for visual learning by using our intranet, smartphone apps and videos to make training more effective and easy to access."

Staff numbers in New Zealand have grown to 5250 with six percent (315) of staff undertaking formal qualifications that include National Certificates, New Zealand Certificates and apprenticeships as well as specialist qualifications in areas as diverse as water reticulation and the safe use of explosives.

All staff undertake some type of safety, technical, leadership and/or EnviroWise training. The company's trainers are qualified workplace assessors and hold 4098 qualifications. ●

Key training implemented

Connexis Award: Turnover \$100 million plus

McConnell Dowell / Downer NZ Joint Venture (JV)

The SH1/Russley Road Upgrade, was formed in early 2010 to tender and deliver this high-profile roading project in Christchurch and worked closely with the local community and the NZTA's regional delivery team.

At peak construction, 130 people were working on the project, including subcontractors. A total of 165 people attended courses during the delivery period to meet the significant challenges for planning, safety, and traffic control.

"The project could not have been realised without the immense expertise, know-how, and collaboration of all parties involved," says the company.

A risk focused assessment was taken of JV competencies to identify key training needs and implement a training matrix and training programme to respond specifically to project risks and contract requirements.

Task-specific and project-wide training was captured in this matrix. JV staff, including subcontractors, attended a range of courses, including but not limited to: Confined space, working at heights, first aid, health and safety representative (Level 1), injury management; and ISO 9001:2015. ●



Career development Connexis Award: Turnover \$10-100 million



Isaac Construction is a Christchurch-based, vertically integrated civil contractor currently employing 242 staff plus 46 temporary staff.

All staff are involved in professional development and resourced with coaching and time to study so they can 'be their best', confidently and capably achieving their role expectations.

The appointment of a training and development manager, 15 months ago, has strengthened the company's ability to support and resource professional development across the organisation.

A career development pathway is linked to the roles within the organisation, so staff know the capability requirements of their current role. ●

Core competency

Connexis Award: Turnover \$10-100 million

CB Civil & Drainage was set up in 2012 and has steadily developed to become one of our fastest growing civil contractors, with 70 permanent staff across Canterbury and Auckland.

Core competency and health and safety training is mandatory for all staff, therefore 100 percent of staff undertake some form of training. About 30 percent have recently completed, or are working towards, more formalised training such as a Civil Trade Certification or NZ Diploma in Engineering.

Staff also regularly undertake training in short course modules, and training is offered across all roles in the business, from project managers, supervisors/foreman, engineers, operational crews, tradesmen and labourers. ●



On-the-job training

Connexis Award: Turnover \$10-100 million

Civil Construction is a medium sized company providing civil works, earthworks, drainage, roading and general contracting solutions to the South Island construction industry.

Civil Construction currently has 48 employees across both Queenstown and Christchurch branches, with 30 percent currently enrolled in a training course. Of those enrolled, some three quarters of them are doing a Connexis course.

A structured training programme is in place through on-the-job training and formal qualifications to maintain up-to-date, best practise knowledge and ensure high workmanship, with a variety of staff and skill levels enrolled from low skilled operators up through to management.

The first Saturday of every month is set aside for training workshops, where anyone on a training course is able to come to head office for a quiet place to study or be mentored. ●



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Working initiatives

Connexis Award: Turnover up to \$10 million

Connell Contractors is a Hamilton based company working throughout the North Island, noted for working on projects that have a degree of difficulty, or is in a high compliance environment, especially deep wet drainage, marine work, shoring and dewatering, power reticulation and multi-storey buildings in electrical switchyards.

The company has 35 staff including construction site staff, estimators, engineers and compliance officers who are encouraged to complete training whether it be an apprenticeship or CPD for the professional staff. A third of its staff are in training.

The Civil Trades qualifications staff are currently working towards including pipeline installation and maintenance, plant



operation and structural concrete.

Principal Dave Connell has spent a lot of time nationally promoting the Civil Trades and the company enjoys relationships with organisations such as the Southern Initiative to get young people working. ●

Invested in training

Connexis Award: Turnover up to \$10 million

Construction Contracts (CCL) is a medium sized civil, drainage and water contractor based in Taita, Lower Hutt City. CCL, owned and operated by directors David Howard, Dayle Scrimshaw and Steve Scrimshaw, employs around 40 full time staff.

The company's award successes include winning the CCNZ Wellington/Wairarapa Branch Construction Awards 2017 and 2018; plus a Connexis Company Training Award.

Since winning the Connexis award last year, CCL has continued to invest heavily in training, development and innovation; covering a wide variety of skills and roles, ranging from driving lessons for junior staff to technical skills such as confined space and traffic control, through to business mentoring for the directors of the company.

CCL holds a bi-weekly training session for all employees which its calls "Smarten Up". All staff are involved in training of one sort or another and training and qualifications for staff working at all levels. ●



Filling the skill gaps

Connexis Award: Turnover up to \$10 million

Gair Contracting undertakes bulk earthworks across the forestry and civil construction sector and employs 24 operators and three management staff.

The percentage of staff in formal training is 22 percent with all other staff having undertaken at least five earthworks related unit standards (newer staff have six months to complete this process).

The company also has two staff undertaking Civil Tradesperson certification with earthworks and road construction strands, and two operators enrolled in Civil Tradesperson certification with the new forestry strand. Another employee is enrolled in the L6 Occupational Health and Safety Diploma and has one paper left until completion.

GCL runs its own informal training system, which all staff come under and has created its own workbooks with machine



tasks and forestry and civil categories. The company's annual training plans for operators plan out what competencies it targets for each operator with the idea of creating multi-skilled operators and filling any company skills gaps as per its training matrix. ●



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