



# A Shared Future

**Downer's sustainability initiatives in New Zealand**





# Contents

Our path, our legacy	4
Spotting sustainable opportunities	6
It all comes out in the wash	8
The link to evaluating sustainability	10
Sealing the circular economy	14
Sustainable communities	16
Digital technology: a force for nature	20
Queenstown Airport: Turning trash into treasure	22
Recycling: from roads to footpaths	24
Safety and Smart Shelters	25
Kiwi extreme stream clean	26
Milford avalanche experts	27



---

# Our contribution to New Zealand

Downer has been helping to shape our country for over a century. It's this heritage that uniquely identifies our 12,000 employees as stewards of the communities and ecosystems around us.

*As Downer's role in New Zealand continues to grow, we increasingly see a drive to improve our sector, helping to ensure we build communities for the future. Sustainability is at the heart of this shift and we want to ensure we consistently deliver the services our customers entrust to us. Our success, and the success of our customers, is more than contract wins and strong bottom lines. Success comes through strong relationships and providing services that positively impact the lives of New Zealanders.*

*Our approach to sustainability is simple. Zero Harm is embedded in our culture and fundamental to the way we do business. Everyone has the right to go home safe and healthy at the end of their shift, having left their environment in a more positive place.*

*Over the past year, we've worked towards our sustainability goals through various initiatives. Our newly established Sustainability Governance Group, represented by the diverse parts of our business, ensures we are aligned to common goals to drive engagement and deliver on our commitments. Downer has also signed up to the Climate Leaders Coalition to take steps towards the decarbonisation journey our country needs. We are now in the process of planning our path to address specific targets for 2050.*

*Our rapid business growth has been aided by innovative programmes that have added sustainable value to our works. In New Plymouth, our Road Science team introduced Plas Mix™ to address the growing waste plastic problem. By repurposing waste, the raw shredded plastic in Plas Mix™ is laid and paved just like traditional asphalt. Working with partners passionate about sustainability has seen changes to our delivery. The resurfacing of Queenstown Airport's apron was completed by converting trash into environmentally responsible, low carbon asphalt.*

*We understand the value of applying best practise to our work has been positive and our use of the ISCA framework to evaluate sustainability on the City Rail Link project. Our recent Level 2 EECA Energy Audit of bitumen plants resulted in some solid energy saving initiatives, as well. Our work continues to receive recognition from others too, having recently been recognised with the prestigious Safeguard Award. By addressing a work-related health risk, we eliminated hydrogen sulphide emissions through the manufacturing and storage of bituminous products.*

*We are very proud of our achievements and journey so far, because this success is the result of a collective effort of our people. Our difference is in a workforce enabled to deliver diversity of thought. This continues to contribute to the sustainable work we deliver.*



**Steve Killeen**  
CEO New Zealand



**Barry Bignell**  
Chair, Sustainability Governance Group

---

# Our path, our legacy



## Downer's journey to a more sustainable future

Sustainability is about so much more than protecting the natural environment. At Downer our sustainability journey is about looking after the health and safety of our people; having a diverse and inclusive workforce; being environmentally sustainable; delivering financial growth and value to our customers through our supply chain and helping to build a stronger New Zealand by genuinely connecting with the communities we operate in.

Downer New Zealand's Environment and Sustainability Manager, David Maucor is passionate about the positive impact that businesses can have on the New Zealand environment.

"My job is to help our teams understand how our work can impact the environment, our communities and the sustainability of our limited natural resources here in New Zealand," he says.

"Downer has made good strides in terms of improving its sustainability performance, and I'm excited about the opportunities to do more in the years ahead.

The nature of our work means many of our projects have the potential to cause environmental harm if we're not operating responsibly. By

collaborating with other businesses, our suppliers and subcontractors, we can make a big difference to New Zealand's environment.

Last year we joined the Climate Leaders Coalition, which has proved to be an excellent way of connecting with other like-minded businesses. It inspires all of us to push forward on our sustainability journey."

The Climate Leaders Coalition was launched in July 2018 to promote business leadership and collective action on the issue of climate change. Downer New Zealand CEO, Steve Killeen, is one of the 100+ Chief Executives who have so far signed the joint statement, which commits their organisations to take voluntary action on climate change.

The statement reads:

*For the generations after us, for the country we love, for the viability of our businesses, we are ambitious for action on climate change. If we act now we can forge a path to create a future that is low-emission, positive for our businesses and economy, and inclusive for all New Zealanders. We are committed to playing our part to make that future real. If we don't, our competitiveness is at risk.*

*We take climate change seriously in our business:*

- *We measure our greenhouse gas emissions and publicly report on them;*
- *We set a public emissions reduction target consistent with keeping within 2°C of warming; and*
- *We work with our suppliers to reduce their greenhouse gas emissions.*

## Our path, our legacy

We believe the transition to a low emissions economy is an opportunity to improve New Zealand's prosperity:

- We support the Paris Agreement and New Zealand's commitment to it; and
- We support the introduction of a climate commission and carbon budgets enshrined in law.

Organisations from all sectors of the economy are represented in the Coalition and together the signatories

make up more than half of New Zealand's gross emissions.

"In 2018, after joining the Climate Leaders Coalition, Downer set up our Sustainability Governance Group. It involves people from all of the different divisions across our business. They are all passionate about sustainability and are committed to helping Downer ensure we meet our Climate Leaders Coalition commitments.

"It's exciting - I hope that we will discover new ways of working together that we had never anticipated, and that we will genuinely achieve sustainability goals that will make us all proud," David says.



Downer commits to the decarbonisation\*<sup>1</sup> of its absolute Scope 1 and 2 GHG emissions by 45-50 per cent by 2035 from a FY18 base year and being net zero in the second half of the century\*<sup>2</sup>

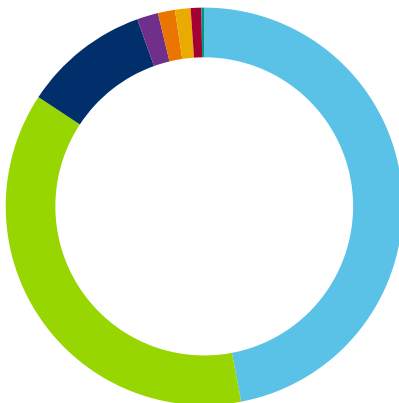
\*<sup>1</sup> Decarbonisation includes the use of registered certified offsets.

\*<sup>2</sup> This is consistent with a 1.5 degree pathway using the latest International Panel on Climate Change (IPCC) scientific reports.

## Environment

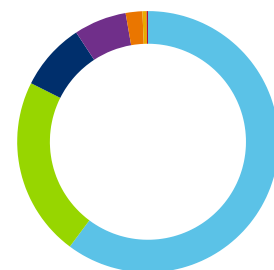
### Breakdown of Scope 1 and 2 emissions by source (ktCo<sub>2</sub>-e) FY 2019

- Diesel Transport - 47%
- Diesel Stationary - 37%
- Natural Gas - 10%
- Electricity - 2%
- Petrol Transport - 1%
- Steam - 1%
- Petrol Stationary - 1%
- LPG Stationary - <1%



### Breakdown of Scope 1 and 2 emissions by Business Unit FY 2019

- Transport Services - 60%
- Facility Services & Utilities - 22%
- Infrastructure Projects - 8%
- Building Projects - 7%
- Samoa - 2%
- Vanuatu - 1%
- Corporate - <1%



**107.18 ktCo<sub>2</sub>-e**

Total GHG emissions (Scope 1, 2)

# Spotting sustainable opportunities



## Catering, cleaning and laundry are some of Spotless' core services.

All of these functions come with their own challenges as they have the potential to generate excess waste if they're not well managed.

Through a rigorous procurement process, the products used at Spotless' 300 catering and cleaning sites are meeting the right standards to minimise negative impact on our environment.

This includes compostable and recyclable packaging, ethically sourced paper products such as photocopy paper, hand towels and toilet tissue made from sustainable forestry and biodegradable chemicals.

"We have a process for verifying supplier certifications with certifying bodies locally and overseas to ensure authenticity, we also work closely with internally recognised organisations such as Din Certco Germany, BPI, Forestry Stewardship Council, PEFC, TUV Austria and at a local level with the Packaging Council of New Zealand and waste management solution providers," says Bobby Buksh, who manages New Zealand procurement for Downer's Facilities, Services and Utilities business.

## Compostable products line

Compostable products line "kicked off" at the Black Ferns vs Australia and the Bledisloe cup match on 17 August 2019.



**21 of 26**  
products replaced by  
compostable ones



**355,000**  
compostable beer cups  
forecasted for coming year



**242,000**  
compostable chip cups  
forecasted for coming year

## Making compost at Eden Park

Spotless is working with Eden Park towards 100% compostable packaging for events as the stadium strives towards its sustainability goal of zero waste to landfill by 2021.

As Eden Park's catering provider, Eden Park Catering (a joint venture managed by Spotless) is responsible for all the food packaging on site, and has been working to change the products used by the venue. This has been a major exercise with the review of products like chip cups, burger clams, coffee cups and lids, disposable cutlery, cold drink cups and serviettes.

An extra challenge has been ensuring Spotless is able to support Eden Park with end-of-life options for waste, post event.

With technology advancements in the manufacture of packaging, Spotless now has access to 100% compostable PLA products that look and feel like plastic but are made from PLA (polylactic acid) derived from mostly corn starch, a renewable resource. This reduces dependency on non-renewable fossil fuel-based traditional plastic products.

The other major game changer has been the advent of bagasse-based packaging products. Bagasse is the pulp left after extraction of cane juice from sugarcane plants. Traditionally, this has been a waste by-product at sugar mills and has been burnt off causing significant environmental impact.

Bagasse is now being turned into packaging products such as burger clams, takeaway containers, trays, cups and is 100% compostable. Both PLA and bagasse packaging will be key products in Eden Park's transformation into a stadium that uses 100% compostable packaging.

The next step is to educate guests at Eden Park, to ensure compostable materials are not contaminated. With this in mind, Spotless has partnered with packaging supplier partners and waste management providers to offer Eden Park a complete marketing and education package for visitors. This includes print signage for compostable bins, case studies for promotion on websites and social media platforms, digital messaging for big screens on game-day and for other display portals at the stadium.

Spotless, in conjunction with waste management providers, also plans to collate data on waste and pass this on to the client for sustainability reporting purposes.



# It all comes out in the wash



Taylor's is the largest commercial laundry by volume in New Zealand. That means a lot of water and power usage.

Every week, approximately 310 tonnes of laundry is professionally cleaned at Taylor's Point Chevalier facility in Auckland. Taylor's also handles 100 tonnes of laundry a week at its Hamilton facility and 30 tonnes per week in Nelson.

## Taylor's weekly capacities



Taylor's has significantly improved its sustainability performance in recent years.

"We installed a waste water recycling system two or three years ago. This was driven by the 300% increase in the cost of waste water disposal," says Rod Gardner, Taylor's Maintenance, Projects & Facilities Manager.

"Since installing the EcoLab aquamiser system, our process water [the water that goes through the washing machines] has reduced from 15 litres per kg of laundry to 8 or 9 litres/kg."

The team are also eliminating perc [perchloroethylene or tetrachloroethylene – a solvent that is detrimental to the environment and human health] from their drycleaning process and replacing it with an organic solvent.

"The only way to dispose of wasted perc is controlled disposal through ChemWaste – and that's becoming more and more expensive," says Rod Gardner.

Some six or seven years ago, the Point Chevalier site was one of the biggest water users in Auckland. David Phyn, Taylor's General Manager was concerned with this impact on the environment and led a change across the business to reduce this impact.

"These days I doubt we're even in the top twenty water users. We've reduced our water usage by 40% or 50%," he says. "The new machinery helps. It's designed in Europe where water is a significant issue. The machinery is designed to use less water and some of the other new machines like our ironers tend to have their own heating unit built in, which means we don't need to draw on the boiler."

The boiler uses natural gas, having been converted from coal in the 1990s. The site is the highest greenhouse gas emitting site in Downer New Zealand, emitting about 6,000T eCo2/year.

Downer's Manager Environmental Sustainability David Maucor says that means Taylor's has an interesting challenge ahead.

"Downer's Sustainability Governance Group is tasked with setting an emissions reduction target and coming up with



## It all comes out in the wash

the initiatives that will help us meet that target, so we're interested to see what we can do to help Taylors make progress in this area. Our investment in new equipment is already helping to address this challenge."

There has also been a noticeable trend away from disposable products in recent years.

"In the past we lost business to disposable products, for example disposable surgical gowns that are used once and thrown away. That kind of hazardous waste used to be shipped off-shore for disposal, but that's just not economically viable anymore. Many of our clients have moved back to using washable, reusable items that might get used 100 times before they reach the end of their life. However there are areas where the use of disposable products cannot be avoided, therefore our Healthcare Supply department offers an extensive range to support this alongside its reusable range," David Phyn says.

Taylors is predominantly a rental service business, in the sense that it owns most of the clothing and linen

that it launders and clients rent the gear from Taylors. Recycling plays an important role in the product lifecycle.

"When our blankets and towels reach the end of their life, we donate them to the City Mission and SPCA or repurpose them as reusable wipes for businesses such as engineering workshops.

"We find that these days our customers want to know about the entire lifecycle of the product. Is the cotton ethically sourced? What happens to it at the end of its life? Does it get dumped or recycled? So we're now challenging our suppliers to answer these questions.

"We're also talking to customers like Air New Zealand about how our products are packaged. The DHBs are interested in things like our deliveries and the vehicles we're using, and how we can reduce our footprint.

"I don't know the outcome of those discussions yet, but it's great that our customers are engaging with us," David Phyn says.



# The link to evaluating infrastructure sustainability



Sustainable infrastructure is designed, constructed and operated to optimise environmental, social and economic outcomes for the long term.

City Rail Link is focussed on delivering a benchmark for sustainable infrastructure in New Zealand. The goal is to build New Zealand's largest transport project, being mindful of the resources used, without creating unnecessary waste and leave behind a social and cultural legacy for Auckland.

The Infrastructure Sustainability Council of Australia's IS Rating Scheme is Australia and New

Zealand's only comprehensive rating system for evaluating sustainability across the planning, design, construction and operational phases of infrastructure programs, projects, networks and assets.

Evaluating sustainability performance can be tricky. The ISCA framework helps ensure our projects measure up to international standards. It evaluates the sustainability performance of the quadruple bottom line (Governance, Economic, Environmental and Social) for infrastructure development.

Downer introduced the programme to New Zealand in a pilot on the Downer Soletanche Bachy Joint Venture contract for our work on Auckland's City Rail Link.

## New Zealand's largest transport infrastructure project

City Rail Link is the largest transport infrastructure project ever to be undertaken in New Zealand. It's a 3.45km twin-tunnel underground rail link, some 42 metres below the city

centre. It will transform the downtown Britomart Transport Centre into a two-way through-station that better connects the Auckland rail network. The Downer-Soletanche Bachy joint venture was awarded one of the first construction contracts for the City Rail Link project in 2016. The work involves the underground rail line linking Britomart and the Auckland city centre with the existing Western line near Mt Eden.

Downer New Zealand's EGM Infrastructure Projects John Burden says the CRL is being designed and constructed to the highest sustainability standards. "Sustainability is a cornerstone of the CRL project. It is vital we integrate sustainability into the design, construction and maintenance of the project assets. By using the talented people we have internally and by partnering with the right people externally, we will help to deliver a project that will set the benchmark for sustainable infrastructure in New Zealand," John says.

Downer is helping to deliver a number of contracts for City Rail Link.

## The link to evaluating infrastructure sustainability

Connectus (McConnell Dowell and Downer Joint Venture) is delivering the cut and cover tunnels under and along Albert St from Customs Street to Wyndham Street.

In April 2019, the Link Alliance was selected as the preferred bidder for the C3 alliance contract, which is the

largest package of work for the City Rail Link project. (The Link Alliance is a joint venture between Downer, Vinci Grands Projects, Soletanche Bachy, AECOM, Tonkin + Taylor, and WSP Opus).

Downer is also the preferred supplier to maintain three of the CRL stations

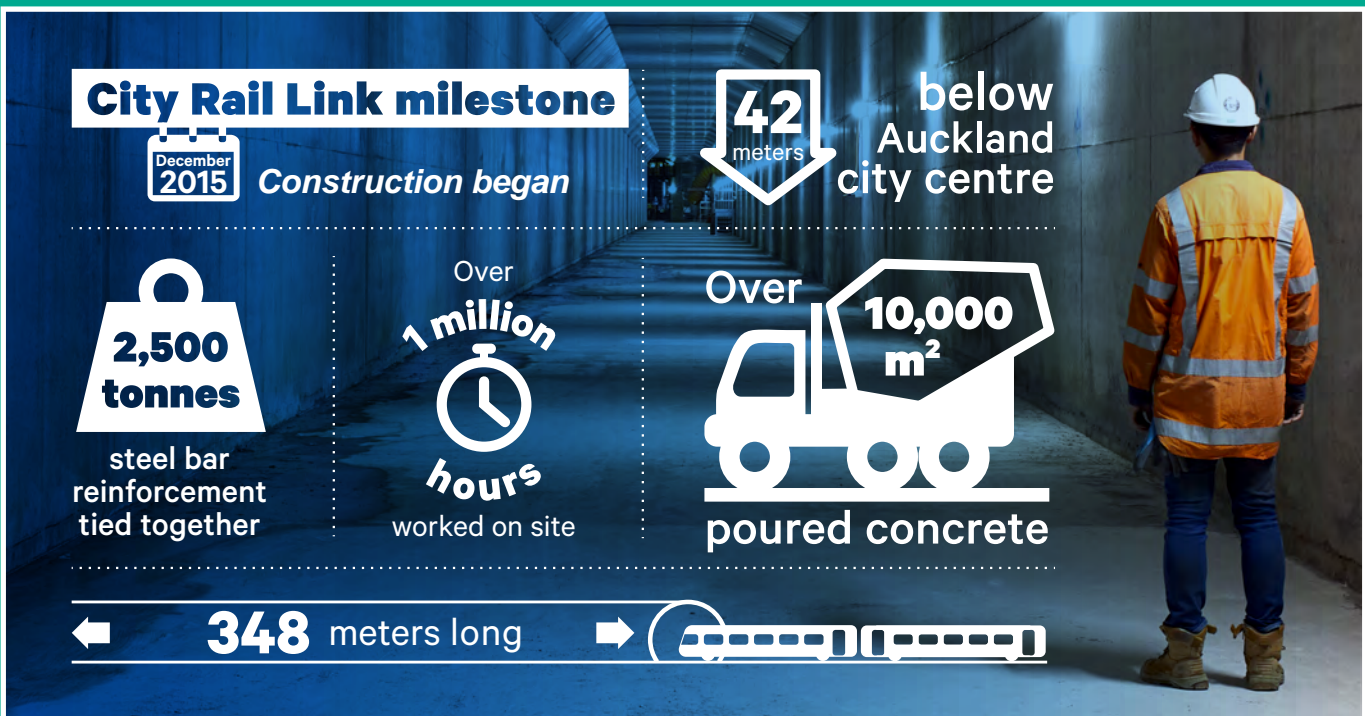
for up to 30 years. Downer's total share of all work is expected to exceed NZ\$1 billion of revenue from the construction and maintenance contracts currently under way or planned for the future.

## Applying the ISCA framework

To date, the C1 and C2 contracts have been awarded 'Leading' Infrastructure Sustainability Design Rating by the Infrastructure Sustainability Council.

In 2018, City Rail Link was recognised for changing the way infrastructure projects are designed and delivered. The project won the Efficiency Champion category and the Supreme Award at the NZI sustainable business network awards.

The judges said CRL has "proven the infrastructure industry can reduce greenhouse gas emissions and its environmental impact while developing Auckland's much-needed public transport infrastructure. This will result in ongoing reduction in both congestion and carbon."



## Socially sustainable

CRL has a social strategy focussed on connecting people to real opportunities through employment, training and social innovation. Engaging students in school, training and at tertiary institutions is helping to support our future workforce. Downer has been helping to shape stronger social outcomes through our contracts:

### Mana Whenua

The City Rail Link Mana Whenua forum is made up of eight iwi with an aspiration to be exemplary in the practice of sustainability - encompassing the four well-beings (environmental, cultural, social and economic), aligning and supporting kitiakitanga. The Downer Soletanche Bachy Joint Venture hosted briefings to educate and upskill employees with

regard to excavations on site. Ngāti Tamaoho provided a cultural briefing giving context to the history of the area, it's significance to Māori, as well as the protocols that must be followed if evidence of Māori occupation or remains are found during the bulk excavation.

**South Pacific Indigenous Engineering Students (SPIES)** were invited to visit the Downer sites to gain insight into the project and construction techniques to better fit with their studies at the University of Auckland. Downer sponsors SPIES to help students connect their theory into practical expertise, accessing career pathways and meeting key industry leaders active in transforming the way we work.

**CBD Jobs and Skills Hub:** The CBD Jobs and Skills Hub was established

to support pathways for sustainable employment in Auckland city. Downer has engaged a carpentry apprentice through the CBD Jobs and Skills Hub to help construct the underpinning beam formwork and he is now continuing his apprenticeship with Downer.

**Engineering Week:** Working alongside local schools, Engineering Week provides an opportunity for Downer to open our sites to potential future engineers. The size and complexity of City Rail Link proved to be popular with STEM teachers and two high schools took advantage of Engineering Week to visit. The 20 female students from Auckland Girls Grammar and St Dominic's College, Henderson were shown through the site by a current graduate who explained his career pathway to date.



**nudge.**  
health & lifestyle

## Making healthy easy!

nudge is about making it easier for our customers, clients and staff to nudge towards healthier choices. Health and wellness is more than a trend, it plays a critical role in the enjoyment of our lives — and it is here to stay.

[www.spotless.com/nudge](http://www.spotless.com/nudge)

LOW  
FAT

LOW  
SUGAR

LOW  
SALT



## A bright future

ISCA noted several highlights for contract 1:

- Water-efficient fittings specified for the refurbished Britomart station are projected to **reduce water usage** over the life of the asset by **more than 50%**;
- A projected **reduction in life cycle energy-related greenhouse gas emissions by over 25%** through efficient construction techniques, including replacing diesel generators with grid electricity, and specifying energy efficient equipment for the refurbished station.

Key sustainability initiatives planned over the project lifetime include:

- Switching from diesel generators to grid electricity during construction;
- The use of LED street-lighting for the Albert Street reinstatement;
- Collaborating with EECA to train drivers and monitor machinery during construction to reduce fuel use;
- Changing excavation methods to reduce diesel and water use; and
- Installing tree pits in the street to collect and filter stormwater runoff.

Downer is the leading construction business delivering ISCA certified projects in New Zealand.



## A step back in time

Downer has over a century of rail infrastructure experience providing end-to-end, innovative transport solutions in both New Zealand and Australia with a deep connection to Auckland's rail network.

Britomart train station was originally Auckland's Chief Post Office, opened in November 1912 and built by the Public Works Department, which was acquired by Downer in 1996.

Ninety years later, Downer won the contract to build the first stage of the new Britomart transport terminal, which involved digging a trench stretching 150m from the back of the Chief Post Office to Britomart Place, to make way for the underground train tracks. Downer was then appointed to renovate the Chief Post Office (a Category 1 Heritage Building), to strengthen its structure and restore its façade.

---

# Sealing the circular economy



In 2018, China closed its borders to other countries' waste plastic. This created a serious problem for New Zealand, as plastic is being stockpiled with very few ways of repurposing it.

Downer and New Plymouth District Council worked together to address the growing waste plastic problem. The local authority had an existing partnership with EnviroNZ and together engaged Downer's Road Science team to come up with a ground-breaking solution - Plas Mix™.

Plas Mix™ is raw shredded plastic that goes into asphalt.

Downer laboratories identified the optimum plastic mix and the size needed for a successful product. It is laid and paved in the same way as traditional asphalt. The outcome means waste is successfully repurposed while not compromising the integrity of the pavement solutions.

"The main benefits of using recycled plastic in roading is that it prevents waste going to landfill. It also eliminates the need to transport and ship these materials thousands of kilometres overseas for processing, which significantly reduces our carbon footprint," Glen Jones, Commercial Manager at EnviroNZ says.

A secondary benefit found in testing was that the performance of asphaltic road surfacing was enhanced by adding plastic, especially in areas of waterproofing and rutting.

Downer was recently awarded a 10-year New Plymouth District Council maintenance contract, covering urban and rural roads in the district, including road maintenance, CBD cleaning, water and wastewater reticulation renewals and small to medium bridge maintenance.

With a unique focus on sustainability and a clear commitment to safety, this contract presented the right opportunity for the first large-scale trial of Plas Mix™.

The trial consumed **500 kilograms of hard plastic waste in 100sqm of road**. This is the equivalent of plastic waste that 1,300 people would generate in a week.

Common types of hard plastics included containers for margarine, yogurt, cottage cheese, butter, and bottles for cleaning products, dishwasher powder bottles, polystyrene packing and coloured juice bottles.

"Downer and the Road Science team are committed to providing innovative solutions for New Zealand's roading market. Developing practical and cost effective solutions to sustainability challenges remains front and centre for our team. Reducing solid waste from entering landfill, while also reducing our carbon footprint and providing high quality, cost effective outcomes, is a challenging yet motivating assignment for us," says Darcy Rogers, Technical Development Manager, Road Science.



# The pathway to repurposing plastics!

Downer's Road Science team create an amazing range of innovative road products such as Plas Mix™.

Plas Mix™ is shredded waste plastic that goes into asphalt. This means waste is successfully repurposed while not compromising the integrity of the pavement and provides sustainable solutions for clients such as a New Plymouth District Council.

Bringing together experts to drive innovative roading and pavement solutions

---

# Sustainable communities



## Communities are at the heart of what we do

Our belief in relationships creating success extends beyond the facilities and infrastructure we deliver for communities. We want to help the people who make up those communities succeed – which is why we focus on social responsibility, local employment, cultural heritage management and stakeholder engagement. We're proud of these programmes and it has been incredibly rewarding to witness the success of our people and the communities we work in.

### Downer Basic

---

Initially developed in partnership with the Ministry of Social Development, Downer Basic is designed to provide an introduction to the infrastructure sector, helping Work and Income clients to find employment opportunities in local communities around New Zealand. The programme is a shared commitment to invest up-front in practical training and skills development, allowing for potential employees to be trained, mentored and supported into full-time employment opportunities and onto a career pathway.

Many graduates have overcome personal challenges to get to where they are today and many of our graduates have grown into frontline leadership positions across Downer. Their hard work and determination has opened the door for others in their communities.

Celebrating  
**1100**  
graduates through  
Downer pathways





## In Work Success

Employees who come through the Ministry of Social Development often have challenges in life that mean maintaining employment can be difficult. To support them through their new role, an individualised mentoring and training programme is put in place over 6 to 12 months. This In Work

Success programme allows us to identify potential issues for individual employees and provide coordination of a whole-of-life support service that links into the workplace. But this isn't just one-way, as we also upskill and support our line managers to equip them with the tools and resources

to support their team members. The programme has resulted in increased retention rates.

The powerful stories of the difference it is making to our people and their families is a regular reminder of its positive impact.

## Te Ara Whanake and Te Ara Maramatanga

Working alongside Te Puni Kōkiri, Downer continues to work to lift participation levels of our Māori workforce through the development of a leadership programme designed to enhance Māori representation at all levels of the business. By encouraging the career progression of our Māori employees, we encourage them to

become influential leaders and role models.

Our Te Ara Whanake leadership programme is for Māori and is held in a marae setting with a focus on Māori tikanga (protocol). It is about embracing their heritage, being proud of who they are and stepping into the leadership space.

The success of Te Ara Whanake led to Te Ara Māramatanga – an immersion marae-based programme for non-Māori leaders to build their knowledge of Māori tikanga, culture and history.



**197** Māori Leaders have attended Te Ara Whanake



## Mana in Mahi

The government's Mana in Mahi programme gives young people, particularly Māori and Pasifika, the chance to earn while they learn. The scheme is for 18 to 24 year-olds who have been on a benefit for three months or more. They receive 30 hours of paid full-time work a week, training for an industry qualification and the clothing and tools they need to start work.

Downer helped pilot the Mana in Mahi programme, providing employment opportunities through our subcontractors. We also offer the Downer Basic training and In Work Success support to help participants feel more secure in their new employment.

33

Graduates  
over the past  
12 months

## Māori and Pasifika mentoring

Downer's vertical construction services in New Zealand are delivered under the Hawkins brand.

Hawkins supports Māori and Pasifika men and women entering the construction industry through its Māori and Pasifika Work Placement and Mentoring Programme.

With the support of a Hawkins mentor, young people are encouraged into an apprenticeship with a Hawkins subcontractor and work towards a career in construction.



## He Toki ki te Rika

Hawkins has been involved at a governance level in four trades training partnerships established to upskill Māori and Pasifika youth in Christchurch, Auckland, Waikato and Wellington. The goal is to support a skills pipeline for Hawkins' supply chain. The inaugural partnership is called He Toki ki te Rika.

He Toki was created to build Māori capability and leadership through the trades, ensuring that Māori living in Canterbury would benefit through the rebuild

of the region after the 2011 earthquake. Ngāi Tahu invited the Ara Institute and Hawkins to work together to deliver these outcomes.

The programme has focused on Māoritanga, work readiness and trades training including carpentry, plumbing, electrical, welding, painting, plastering and civil. To date, He Toki has supported more than 1200 local Māori in pre-trades training and employment across Canterbury and Otago.

## Proud partner of the **Black Ferns**, the **Black Ferns Sevens** & the **Māori All Blacks**



### Sustainable Communities

#### Jobs and Skills Hubs

Hawkins supports the Ara Jobs & Skills Hub at Auckland International Airport. The Hub works collaboratively with employers, community and government to create pathways to sustainable work in South Auckland.

Ara is developing a culture of learning across the airport construction precinct with easily accessible 'on the job' training that focuses on upskilling and pathways to employment.

In addition, Ara works with five neighbouring secondary schools offering supported work experience

to **more than 80 students** annually. This programme is helping many students into work, apprenticeships and continuing study pathways. It is building confidence and a clear understanding of the work opportunities across our industries and the connections into sustainable careers.

#### The Southern Initiative

Downer and Hawkins are supporters of The Southern Initiative, which champions, stimulates and enables social and community innovation in South Auckland.

Almost 20 per cent of Auckland's population lives in the area covered by The Southern Initiative.

The population is youthful, primarily Pasifika and Māori, and abundant in assets, talent, creativity and opportunity, but also faces complex social, economic, cultural and environmental challenges.

Through The Southern Initiative, Downer and Hawkins are members of He Waka Eke Noa, a sustainable procurement supply chain facilitator supporting the growth of Māori and Pasifika businesses and social enterprises. He Waka Eke Noa is an intermediary that connects Māori and Pasifika-owned businesses with clients. It is focused on the construction and infrastructure trades.

---

# Digital technology: A force for nature



Technology is rapidly changing the way many industries work. Downer sees the impact on infrastructure and construction projects.

Downer has created a Digital Engineering Steering Group with members from across its various business units, to help it remain at the forefront as the technology evolves.

“The aim of the Steering Group is to provide governance and start a community of practice, so that we can

leverage capabilities, technologies and processes across Downer New Zealand,” National Technology and Innovation Lead - Infrastructure Projects Andre McConnell says.

Downer aspires to be forward thinking and is well developed to provide maximum benefit from advancements in technology. For Downer’s teams, Digital Engineering means everything from data analytics to Artificial Intelligence (AI), Building Information Modelling (BIM), cloud and real-time collaboration,

augmented reality and visualisation, wireless project monitoring through to semi-autonomous construction using drones and robotics.

When embedded successfully, these technologies improve business performance. One of the key benefits of Digital Engineering is that it makes our work more accurate, more efficient and therefore reduces waste – which helps us meet our sustainability goals.



## Digital engineering at Hawkins

Downer delivers commercial building projects in New Zealand under its Hawkins brand.

Hawkins has invested in the tools, technology, and development of processes to allow project teams to use Building Information Management technology on its sites.

“Our primary use of BIM is the 3D modelling, review, and coordination of various design elements. Achieving a high level of coordination benefits everyone on the project – doing it right first time means less rework and waste on our projects and better outcomes for our clients,” Hawkins VDC/BIM Manager Christian McCartney says.

“Additionally, this leads to highly accurate records for our clients, providing value throughout the entire lifecycle of the asset.”

Hawkins used BIM tools extensively on the Auckland International Airport Pier B extension project.

“While the project BIM brief included a number of goals including use of 3D site set-out and 4D scheduling, the most benefit was gained through the 3D coordination of the structural, façade, and building services elements. This enabled us to hand over a detailed record model and asset data to the client,” Christian says.

Hawkins is also using 3D laser scanners, which bring real-world conditions and measurement into the virtual model.

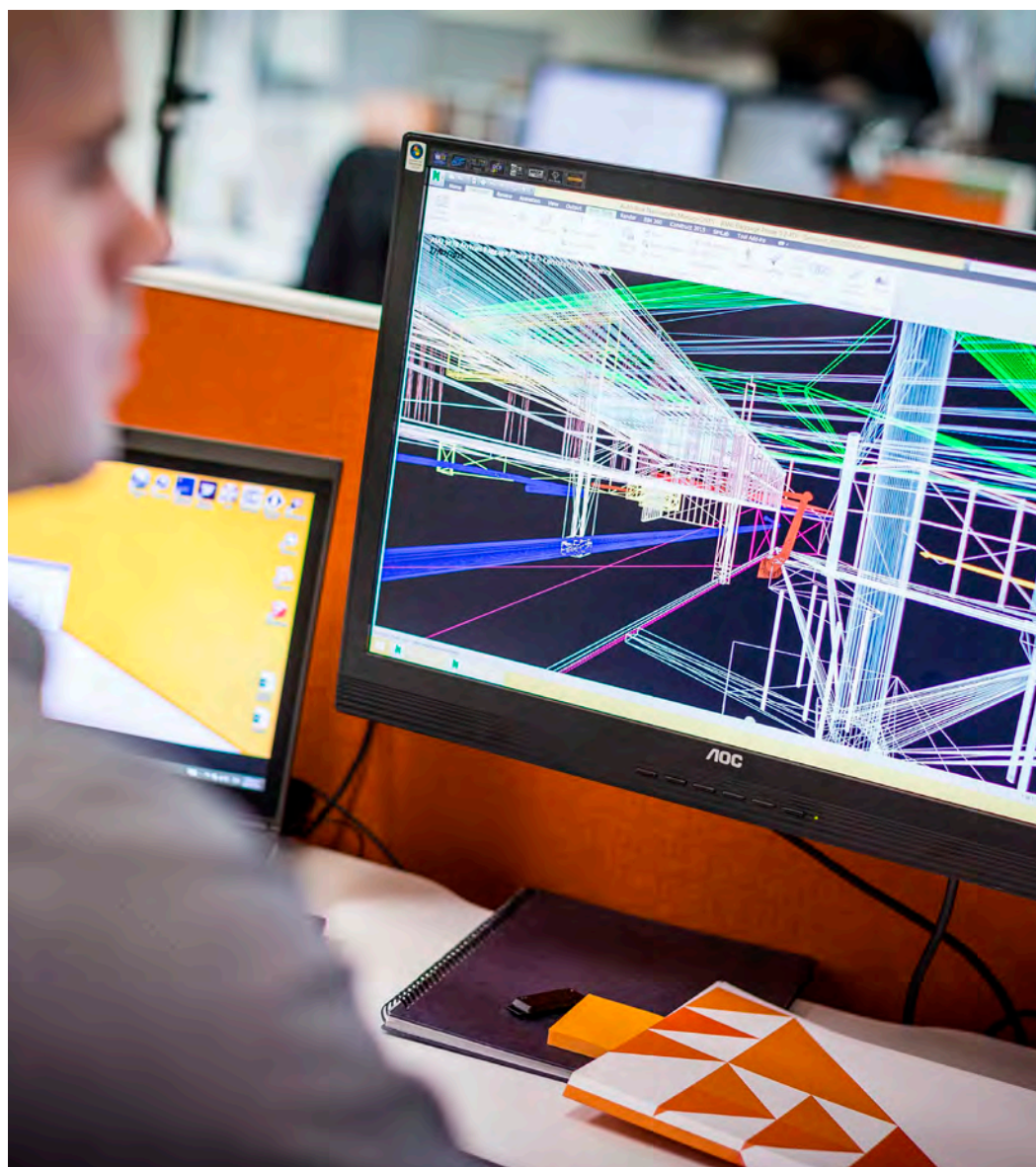
“This ensures we are working in an accurate context,” Christian says. “We also use augmented reality with tools like the Hololens, which brings the virtual model into the real world, allowing our team to experience a digital model at actual size and improving their understanding of the job.”

Hawkins takes a collaborative approach by helping its subcontractors to use BIM technology.

“The maturity of the supply chain plays a big part in how we approach

each project. The majority of subcontractors in New Zealand do not have in-house BIM capabilities, so we tend to work closely with external providers to do the modelling and coordination for those trades.

This has the benefit of one company under Hawkins’ leadership taking a holistic overview on services coordination. The result is coordinated installation layout drawings, which we then provide to our subcontractors. The subcontractors can then also realise the value gained from using these tools,” Christian says.



# Queenstown Airport: Turning trash into treasure



Globally businesses are equipping themselves with ways to process and recycle commercial and community waste, in the war on plastics and pollution.

New Zealand's contribution to the United Nation's Sustainable Development Goals is driving the public and private sectors towards more innovative procurement practices and ensuring that recycling and sustainability initiatives remain at the forefront of business strategy. Innovation is the key ingredient to creating ways not just to control waste but also to repurpose and recycle it.

When businesses with a shared sense of sustainable responsibility partner together, the recycling outcomes see a significant shift for the local communities.

Within the construction and infrastructure industry, Downer is leading the way in innovative recycling practices with projects like the recently completed Queenstown Airport Apron resurfacing.

A new asphalt layer now covers the airport's apron, but what lies beneath, is the ingenuity of Kiwi-led recycling technologies. The relationship between key stakeholders, Queenstown Airport Corporation, Downer and sustainability

partners, Close the Loop, Fuji Xerox and DB Breweries led to a surfacing solution that converts trash into environmentally responsible, low carbon asphalt which includes:

- TonerPave™ a low carbon asphalt substitute, developed in partnership with Close the Loop, which uses a mixture of residual waste print toner from toner cartridges and is mixed into the asphalt binder;
- Glass sand, a recycled product made from crushed glass, helping to protect natural aggregates like sand; and
- EME2 is a high modulus structural asphalt. Created to build stronger, thinner, longer-lasting surfaces. It employs a very hard bitumen grade, which gives superior performance in heavy duty structure projects.

Adding toner and EME2 into the mix works to stiffen the asphalt surface as it gets hotter, meaning the apron is less vulnerable to rutting and water ingress.

By partnering with Kiwi organisations such as Queenstown Airport, Downer can pioneer this form of sustainable asphalt which provides a robust, durable surface in all weathers.



## Safety and sustainability

Downer's state-of-the-art mobile asphalt plant was located at the end of Queenstown airport's runway over the course of the project.

Having the mobile asphalt onsite reduced road haulage significantly, which minimised the need for large trucks on local roads as well as reducing emissions across the fleet.

The project included an activation space in the airport lounge area with a trade stand showcasing the project, a recycling station for waste toner cartridges and the DB Breweries beer bottle crushing machine which converts glass bottles to sand in front of the public.

When companies come together in this way with a united vision for delivering recycling solutions, the results can be ground breaking and the benefits long lived.

Downer General Manager of Surfacing Operations, George Leidig captures Downer's focus on driving sustainability:

"We are constantly exploring ways to minimise waste by repurposing recycled materials into new products. Our approach to sustainability is critical to the long-term value we create for the communities we serve."

Through creating new and innovative solutions for a more sustainable future, Downer is helping to create a legacy for the generations of New Zealanders to come.

## Queenstown airport's runway facts



glass bottles used



less truck trips  
due to onsite plant



Waste Printer  
cartridges used  
330,000



45 project staff  
onsite



12,000t  
asphalt  
used



56,410 m<sup>2</sup>  
overall laid

# Recycling: From roads to footpaths

Every year, significant quantities of concrete, old aggregates, timber, glass, and organic materials are disposed of in landfills around the country. These materials can be recycled into civil works projects.

At a time where people and communities are being encouraged to choose walking, cycling and public transport over driving, Downer is working with Dunedin City Council on a sustainability initiative across the footpaths of Dunedin.

With an emerging awareness and willingness within industry and local governments to use recycled aggregates, Downer is taking the asphalt millings it produces from operations across Dunedin and

the Otago region and taking the opportunity to recycle the materials into Dunedin's footpaths.

To generate a reusable aggregate from waste millings, the materials must be crushed, washed and screened and any steel reinforcement removed. This processing must be undertaken using specialised demolition equipment and skills.

The millings are put through a crusher screening plant and processed down to AP50\*. This in turn is processed down to AP20 and waste concrete by-product from the dispatching plant is also introduced at this stage. This gives the finished re-purposed AP20. In the past six months Downer

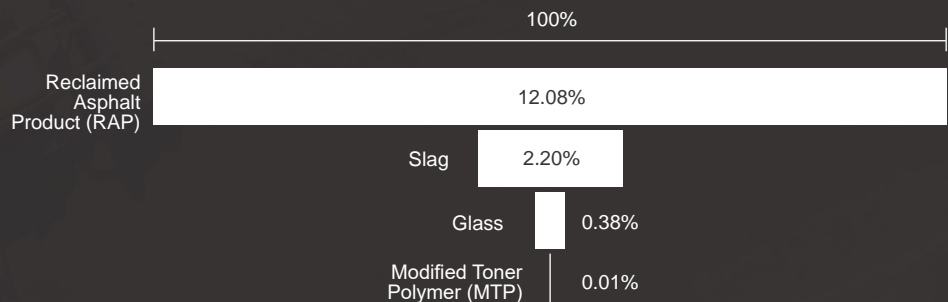
has used almost **3,000 tonnes of recycled asphalt millings** within the 'Road to Footpath' project. **More than 60% of the total volume** of material supplied into the contract is now recycled material.

This means less potential waste going into local landfills and less virgin aggregates being quarried from local environs.

As a result of the success of this project, Dunedin City Council is exploring other ways of repurposing civil materials.

*\*AP is the commercial measurement of the size of the aggregate pieces.*

**Proportion of waste derived material used in Asphalt**  
(for FY19 across Downer New Zealand & Pacific)





---

# Safety and Smart Shelters

The quest to protect human life is at the heart of developing the innovative smart shelters on either side of the Lindis Pass in Central Otago.

The Lindis Pass is a key route for visitors, freight and industry all year round. In winter, the road battles with its fair share of the elements - often covered in snow and ice and is closed five times a year on average.

Our Downer team working on the Central Otago Network Outcome Contract, near the Lindis Pass, set about developing, designing and building innovative Smart Shelters with safety in mind. That purpose was to improve the safety and well-being of road users especially in winter's hostile conditions. The shelters allow people to better prepare for their journey by making informed journey decisions.

The Smart Shelters are especially handy for visitors who may not necessarily be familiar with New Zealand roads.

The shelters house dynamic screens, and you don't even have to leave your car to use them.

Installed in carefully selected pullover bays, drivers can view the information without exiting their vehicles. The screens provide road users with videos of road conditions, safety and road closure information, chain-fitting demonstrations, advice and pull-over areas for fitting, as well as weather information via MetService.

With shelters built on both sides of the Pass, the driver has service continuity at each end of the road network. The technical innovation used in the design and development of the smart shelters is all about keeping drivers safe, with shelters having been placed on road networks managed by different providers.

The shelters are now the property of New Zealand Transport Agency but will be managed and maintained by Downer over the life of the current contract.



# Kiwi extreme stream clean



The Downer and Spotless teams at our National Support office in Auckland are passionate about the environment.

The team spent a day removing garbage and commercial waste from two kilometres of the Puhinui Stream, located five minutes from the office, in an effort to look after the local neighborhood waterways.

The team filled a 3.5-tonne truck three times with plastic and household waste pulled from the stream, including a lot of items that certainly don't belong in local waterways.

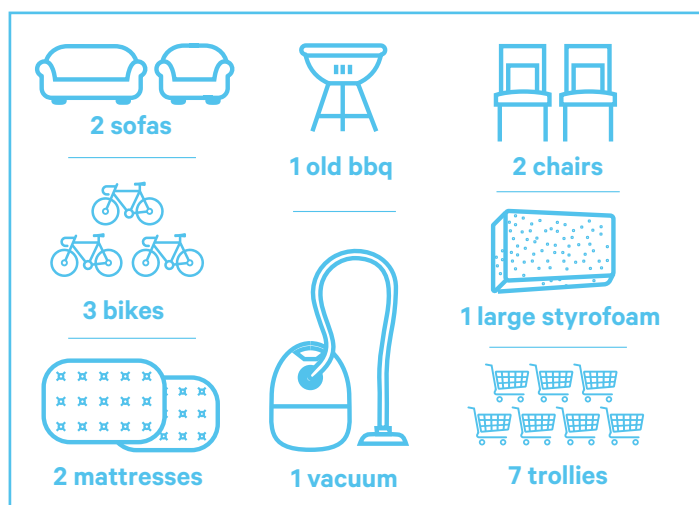
Among other items, the team pulled seven shopping trolleys, two sofas, 24 bags of plastic, three bikes, one vacuum, two mattresses, one old barbecue, a toilet and two chairs from the stream.

“There were some big awareness moments for the team, who learned first-hand that we all need to do our part to treat our waterways better,” says Downer Marketing Manager, Brent Condon, who helped organise the clean-up.

“The group is passionate about our environment and this was a great way for the team to give back to the local community in which we work.

“Talking to our guest volunteer from Wildland Consultants, our clean-up really did save a stream on the brink of ecological disaster where native eels, fish and insects were starting to die, suffocating from human waste.

“Our teams rolled up their sleeves and did something real and tangible for their local environment, which will mean this space is here for the enjoyment of the local community into the future.”



## Stream clean in numbers



## Milford avalanche experts

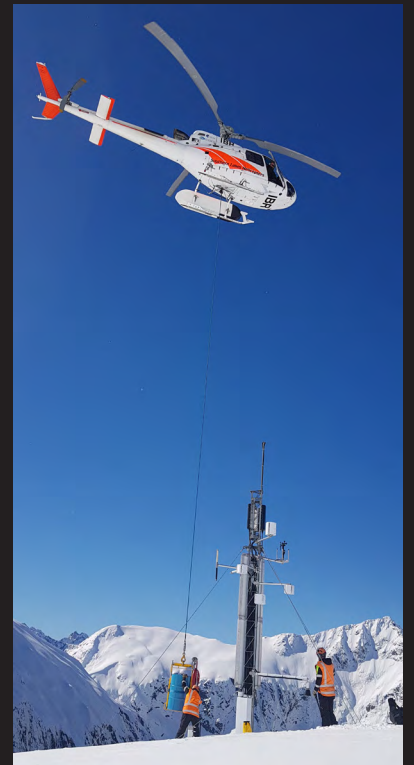
Each year, the Milford Road takes millions of people who visit Fiordland from Te Anau to that jewel in New Zealand's crown - Milford Sound. Milford Sound is a natural wonder, but it's also naturally treacherous when it comes to avalanches and slips. In days gone by, avalanches were very much a part of life for workers who built the road and tunnels crawling through the Southern Alps. People were killed and bridge structures, road works and tunnel portals were often destroyed. At the time there was only basic knowledge of avalanches and the warning signs.

Fortunately, in recent history the Milford Road Avalanche Control Programme came into full development. The Downer team in partnership with New Zealand Transport Agency form the Milford Road Alliance who are the sole provider of the avalanche control programme and are responsible for ensuring the major risk-management processes for Milford Road are sustainable into the future.

The programme monitors, assesses and controls avalanche hazards on the Milford Road and is recognised by avalanche experts as one of the best programmes in a challenging part of the world. It is a case of monitoring more than 85 avalanche slopes along a 17-kilometre section of road by using four automated mountain-top snow and weather monitoring stations and two road-level stations. The four automated high-level snow weather monitoring stations and two road level automated weather stations

provide round-the-clock data on wind, temperature, rain and status of the snow-pack. The information, collected from the weather stations along with MetService and field observations, is used to evaluate the risks of avalanches and make hazard predictions.

The MetService also provides our Milford Road Alliance team with several new and enhanced forecast services, including severe weather threat matrices covering the threat of snow, strong winds, and heavy rain with Free Air Freezing Level (FAFL). New animated rainfall, snow and cloud ceiling forecast maps also help with effective and efficient road management planning. These innovations place New Zealand at the forefront of avalanche control technology and practice.





This brochure is printed on recycled paper stock.

