

VERSION 2  
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# TOWARDS 2030: THE CONSTRUCTION SITE OF THE FUTURE

THE AUSTRALIAN CONSTRUCTION INDUSTRY IS GROWING BUT IT'S ALSO CHANGING, RAPIDLY. SAVVY OWNERS HAVE CAPITALISED ON TECHNOLOGY TO RUN SITES THAT ARE MORE PRODUCTIVE AND EFFICIENT THAN EVER BEFORE; ALLOWING THEM TO WIN MORE WORK AND MAINTAIN AN EDGE. THIS WHITE PAPER LOOKS TO THE FUTURE AND PREDICTS WHAT YOU SHOULD CONSIDER TO STAY COMPETITIVE.

WesTrac



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# OVERVIEW



**Australia's population grows by 1.6% each year**



**The construction industry contributes around 9% to the nations GDP**



**The construction industry was responsible for \$360 billion in revenue in 2019**



**Around 200K new housing commencements per year**



**Construction employment reached over 1.18m in 2019 and will exceed 1.28m by 2024**



**The construction industry has a projected annual growth rate of 2.4% in the next five years**

With Australia's population growing by around 1.6% every year, topping 25.5 million in 2019, construction is one of the nation's fastest growing sectors – and trend analysts predict it will continue to maintain strength. Influenced by population growth, technology, labour markets and housing trends, the Australian construction industry is continuing to employ more people and contribute a greater share to the Australian economy.

Over the last decade the housing construction industry has been steadily bubbling along, with around 200,000 new housing commencements per annum (up from a low of 145,000). Commercial infrastructure products such as hotels and shopping centres are also on the increase as cities continue to grow.

The construction industry is the largest non-service related industry in the country, contributing around 9% to the nation's Gross Domestic Product (GDP). Innovative

techniques and building technologies continue to contribute to the effectiveness and productivity of the construction industry; which directly employs over 1.18 million workers in 2019.

The construction industry was responsible for \$360 billion in revenue in 2019. Much of this was related to the rise in residential construction, which is now slowing, but is being replaced by an array of commercial activities to satisfy an increasing population.

The signs are strong for continued growth in construction; with some areas leading the way. There's no doubt that technology is becoming a driving force in this industry. While the construction industry has been slow on the take-up, tech-savvy solutions are now driving change and innovation that's helping our industries compete on a local and global stage.

Statistics source: [nationalindustryinsights.aisc.net.au](http://nationalindustryinsights.aisc.net.au)

# EQUIPMENT MANAGEMENT

Finding the right software fit for your equipment is essential for 21st century success. With a focus on saving time and money, smart software solutions are the simplest way to keep on top of your business.

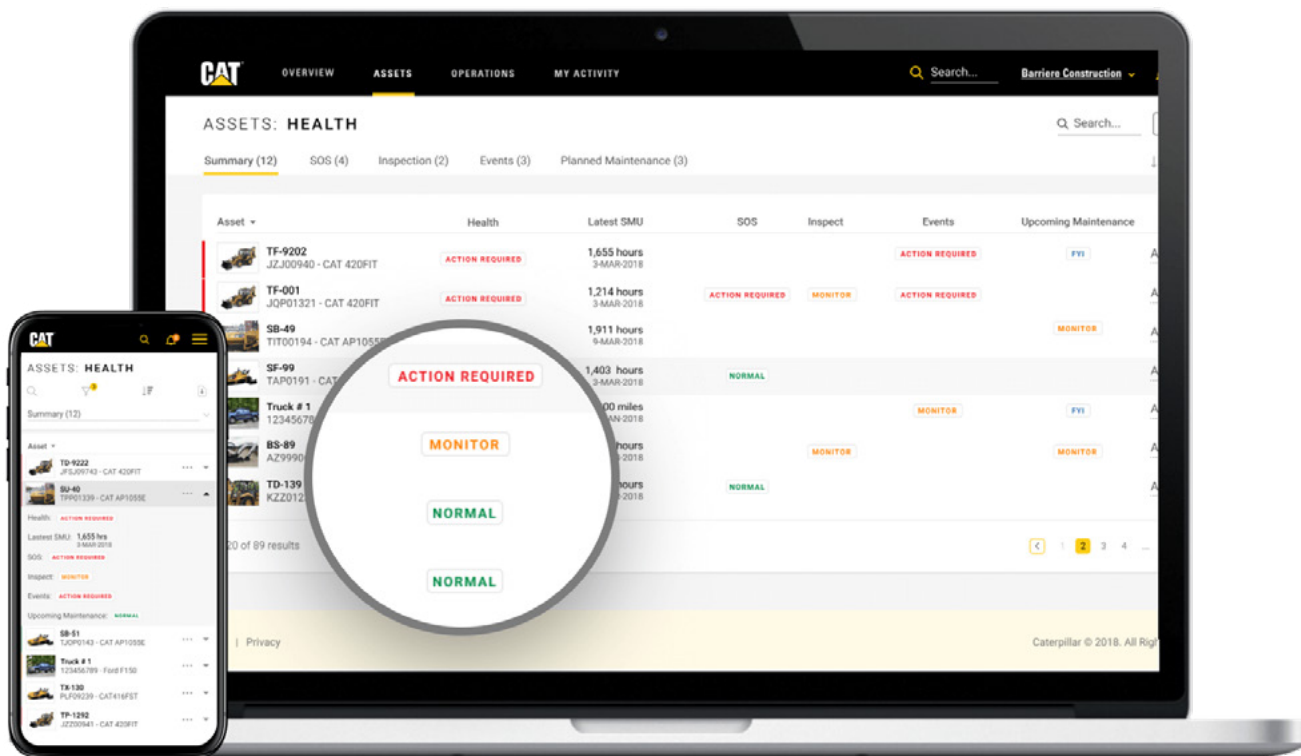
New advances in construction software are ensuring that businesses work smarter in increasingly competitive environments. Challenging economic times call for everyone to do more work, in less time, but at the same high standard. Which is where technology comes in.

**Managing complex tasks off-site and on-site, keeping track of your fleet and equipment and collecting all the data you need is now so much simpler thanks to telematics driving changes in the construction industry.**

A combination of WesTrac's expertise and Cat technologies can help consolidate all your machines and data in the one place. Smart software helps bring all your fleet data together in the one place to avoid surprises with maintenance and keep on top of planned servicing and downtime, all from the palm of your hand.



For example, with an equipment management solution like **My.Cat.Com** (MCC) and VisionLink it's possible to create maintenance logs, identify and prioritise parts and service repair events as far as 3 years into the future by Serial Number. Solutions like MCC allow WesTrac to be proactive by planning and prioritising the upcoming equipment repair and maintenance needs of their customers.



Using technology built into your machines can help you make decisions that are timely and well-informed. You can control costs, manage your workforce and reduce risk – remotely and on the device of your choosing (mobile, tablet or desktop).

Daily reporting helps you plan progress, payloads and cycle times – all in line with daily production targets to enhance your operational activity. It's also the ideal way to identify any unsafe operations such as speeding and reduce wear and tear on equipment.

Equipment management software can also help you improve fuel efficiency through tracking idle time and fuel use across your fleet to help form new benchmarks to optimise efficiencies.

Just as your operation is unique, so are your options for solutions. Tailored and customised solutions are the way of the future, with specialised experts, like the WesTrac Technology Team, able to help you analyse your operation and devise a method that suits your needs now, and into the future.

# PRODUCTIVITY

Top of every manager's wish list is a productive worksite. Productive workers not only lead to higher quality outputs, but better workplaces for everyone. Over 1.18 million workers are employed by the construction industry, creating the infrastructure that drives our nation. However, over the last 30 years, there has been little improvement in workplace productivity with estimates stating that around 30% of efforts are wasted.

This can change. The Productivity Commission held an enquiry into Public Infrastructure Costs back in 2014 which found that there were three key themes to reduce wasted effort:

01

**Depth of procurement and project management skills**

02

**Better integration along the supply chain**

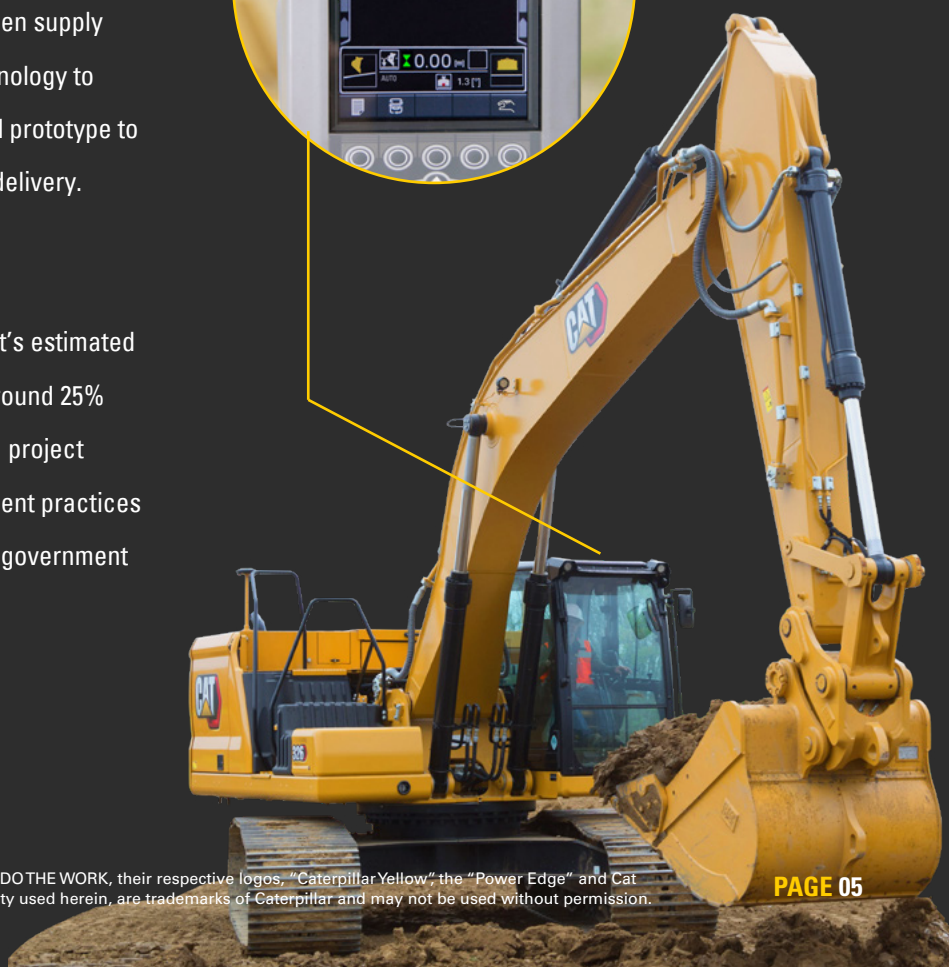
03

**Using technology to improve project outcomes**

Technology-driven solutions are a key enabler when addressing each of these key themes.

Building Information Modelling (BIM) is used globally to increase coordination and collaboration between supply chain participants in construction. It uses technology to bring teams together and then designs a virtual prototype to test outcomes and plan for efficiency in asset delivery.

Better procurement practice could also lead to improvements in project costs and outcomes. It's estimated that poor procurement practices can lead to around 25% of projects running over time and budget. Good project management skills and standardised procurement practices could benefit all stakeholders: from industry to government to the nation.



There are several software solutions that drive productivity. Caterpillar has been leading the field; and has been embedding sensors and connectivity in its machines for over a decade. The software and services offered across the Caterpillar range can cut operating costs and increase productivity.

WesTrac has worked closely with Caterpillar in the development of a digital productivity suite that helps increase productivity, without any compromise of quality or profits.

Whether it's safety, remote options, wireless data or measurement options, there are six Cat Technology tools to give you insight and control through technology.

Two of the most popular Cat technologies utilised by the Australian construction industry include Cat GRADE and Cat PAYLOAD.

Cat GRADE combines digital design data, in-cab guidance, and automatic controls to enhance grading accuracy, reduce rework, and lower costs related to production earthmoving and rough, fine and finish grade applications. With GRADE, grading efficiency can be boosted by as much as 50%.



Cat PAYLOAD provides on-the-go load weighing to assist operators with hitting precise load targets every time, helping to reduce load times, optimise loading efficiency and increase jobsite productivity. Operators can track daily productivity from the cab, with quick access to information such as truck target weights, loads and cycle counts, material movement and daily totals.

A suite of hardware, software and tech solutions that can help upskill employees by identifying training activities that help them make the most of their equipment. It's possible to help your team get the most out of their time on site, through working smarter – and not harder.

A combination of WesTrac's expertise and Cat technologies will help leaders manage assets to optimise long-term performance. VisionLink is one such tool that helps you access production history, productivity and all metrics to optimise productivity and increase profits. You decide on your essential KPIs – and manage your dashboard to oversee your entire operation.

**CAT TECHNOLOGY IS AN INTELLIGENT SOFTWARE SUITE THAT YOU CAN MIX AND MATCH TO SUIT THE UNIQUE NEEDS OF YOUR CONSTRUCTION BUSINESS.**

# SAFETY ON SITE

A safe workforce is a productive workforce. Technological solutions are driving safety measures in the construction industry thanks to products that help teams work smarter and safer. Construction was once one of the least-technological worksites, but now smart tech is driving construction sites of the future.

Building sites are challenging and can be dangerous places. According to Safe Work Australia, 35 construction workers are seriously injured each day. The rate of injury and death has been consistently high, which is why responsible managers are turning to technological solutions to protect their workforce to reduce injuries and fatalities.





Smart software can aid in reducing operator error through fatigue and poor work habits. Cat technologies can be built into the cabs of machines or come in the form of wearables. Some of these safety technologies include:



### **CAT SMARTBAND**

This wrist-worn device automatically detects an employee's sleep and wake periods and converts data into an effectiveness score – viewable by the employee at any time with the push of a button. If a score is approaching 70% – the employee is considered to be fatigue impaired. (As pictured on page 3)



### **DRIVER SAFETY SYSTEM**

An in-cab fatigue detection unit that immediately detects fatigue or distraction through monitoring eye closures and head positioning. If a fatigue event is detected, either a vibration or audio alarm will alert the driver. When coupled with live-data analysis and training and education for driver awareness and behavioural changes, this product will lead to a safer, more productive worksite.



### **CAT DETECT**

Protects workers both in and out of the machine, by sensing hazards (and other ground workers!) with high accuracy. Proximity detection is a real asset on a temporary, dynamic site which offers its own unique set of challenges that can change from day-to-day.

WesTrac also offers a range of training and consulting services to keep your team working safely and effectively. These safety services include sleep profile reporting, operator safety monitoring, implementing a safety culture program and more. When it comes to fatigue management, WesTrac can conduct a fatigue schedule analysis and fatigue risk assessment, then use this information to implement a fatigue risk management system. Reach out to the WesTrac Technology Team to discuss which safety services are right for your operation

# SUSTAINABILITY IN CONSTRUCTION

While many consider sustainability purely an environmental issue, sustainable construction has three key dimensions: social, environmental and economic.

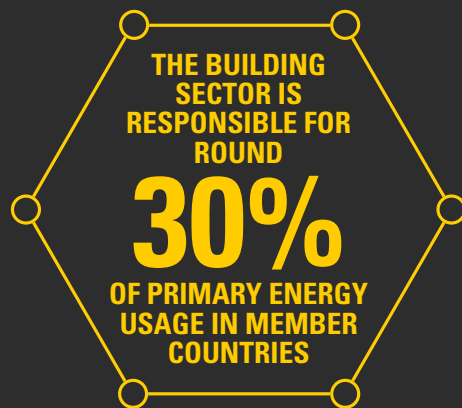
Modern construction projects have sustainability issues at the fore of their planning and day-to-day activities. Sustainability is about more than ecological considerations – it's a broader development issue which encompasses efficient use of resources, economic stability and growth.

The OECD (Organisation for Economic Cooperation and Development) estimates that the building sector is responsible for around 30% of primary energy use in member countries. As such, sustainable building policies aim to reduce CO<sub>2</sub> emissions, construction and demolition waste, and indoor air pollution.

Sustainable construction entails considering the entire ecosystem of the site – along with the needs of your employees. It has a broader footprint than the construction site, and, in fact, takes in the wider community. Using local labourers and contractors makes a positive local impact and boosts the economy.

Sustainable construction can take many forms. From recycling copper slag and concrete, to utilising fire-resistant steel to switching to prefabricated products for bathrooms. Modular construction is the build mode of the future as it's faster, more sustainable and more energy efficient than traditional building modes.

**Prefabrication is a global trend which cuts construction waste, decreases build time on sites and allows for a quick, clean build. It's a cost-effective way to take sustainability to a whole new level.**



Conscious waste reduction methods can reduce landfill by up to 75%, leading to cost savings and environmental benefits. Working to understand which materials can be recyclable on site: such as concrete which can be crushed and used in foundations or as aggregate not only saves on dumping costs – it reduces construction costs at the same time.

Choosing recycled materials in construction can not only reduce costs, it is now a selling point for the end-product. Green-Star Rated properties are returning up to 23% higher capital value and 20% higher rental net returns. As these products become more popular, their costs decrease – making them more accessible and affordable.

Technology can also help improve your company's bottom line through sustainable practices. Cat Technology can help you reduce fuel consumption through monitoring your machine's

idle time to check for excessive idle time, contamination in fuel filters and emissions. Keep track with Cat Product Link; an asset management solution that offers timely information about all your equipment and their performance.

The success stories of the future will be driven by relationships: by smart operators who build on their success through clever connections. WesTrac is proud to partner with many operations, from small owner-operators to large multi-national companies, to deliver construction solutions that will build a better Australia. We'll work with you to find technology options that will bring out the best in your business, today, tomorrow and in the future.

To find a solution to drive your business through to 2030 and beyond, contact the WesTrac Technology Team.



# INNOVATION TRENDS TO WATCH



Construction tasks have been difficult to automate as each worksite is unique and complex. However, there are robotic options being developed that could revolutionise the industry. From robots which lay bricks and masonry, to demolition robots – the industry could be robotised in several key areas. One example is large-scale industrial robots that can 3D print large buildings. This sounds like the plot of a science fiction novel; however, a 3D printed bridge has been built in the Netherlands!

[READ MORE](#)



The benefits of 3D printing are rooted in its reliability; because it's fed a set of preprogrammed blueprints it's capable of printing a structurally-safe building in its entirety. It's also estimated that 3D printing could save construction companies up to 50% of the cost of building a house thanks to lower labour and material costs. 3D printing can also help with the management of client expectations – with scale models helping to ensure that all parties have the same expectations. By 2030, 3D printed homes will be available for purchase for as little as AU\$5,000.

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The Cat Smartband isn't the only intelligent workwear. Smart boots? They're a thing! Steel-caps are no longer the only accessory in a pair of work boots – smart software and wearables can help increase safety on sites. Prototype boots are in the works which contain an array of sensors which can detect gas leaks and have GPS for location-isolation to track safety (when slips or falls occur). They're on the drawing board right now, but by 2030 you can expect them to be the norm.

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Augmented reality (AR) and virtual reality (VR) are two related, yet different technologies. AR takes your smartphone and allows you to add digital elements to a live-view, whereas VR offers the chance to completely immerse yourself in an artificial world. Both can be used to visualise construction spaces through modelling – helping identify issues before they occur – totally transforming the industry. AR offers the ability to see through walls – making identifying mechanical, electrical and plumbing clashes so much easier. How will VR change the industry by 2030?

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# CONTACT

For more information on the latest technology in the industry visit the technology section on our website

[WESTRAC.COM.AU/TECHNOLOGY](http://WESTRAC.COM.AU/TECHNOLOGY)

1300 881 064

[WESTRAC.COM.AU](http://WESTRAC.COM.AU)

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 @WESTRACAUS

## HEAD OFFICE NSW

1 WESTRAC DRV  
TOMAGO 2322  
02 4964 5000

## HEAD OFFICE WA

128-136 GREAT EASTERN HWY  
GUILDFORD 6055  
08 9377 9444

## CANBERRA

78 SHEPPARD ST  
HUME 2620  
02 6290 4500

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