Submission No 42

INQUIRY INTO IMPACT OF TECHNOLOGICAL AND OTHER CHANGE ON THE FUTURE OF WORK AND WORKERS IN NEW SOUTH WALES

Organisation: Transport for NSW

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Transport for NSW Submission

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1 Executive Summary

On 24 March 2020, a Legislative Council Select Committee was established to inquire into and report on the impact of technological and other change on the future of work and workers in New South Wales.

Transport for NSW (TfNSW) has prepared this submission in line with the terms of reference of the Inquiry and TfNSW's role as an employer, the provision of transport services and other relevant TfNSW initiatives.

The role of transport agencies across the world is changing rapidly. Data and technology are increasingly driving how transport agencies deliver services for their customers and regulate sectors of the transport industry.

The COVID-19 pandemic has demonstrated that changing work patterns have a direct impact on how people use the transport network. An effective transport agency needs to respond to such challenges in the short, medium and longer term using technology, data and innovative solutions.

As a service provider, TfNSW has an ambitious vision for a major uplift in the use of technology and innovation. This will enable a better experience for all our passenger and freight customers and support better community outcomes across metropolitan and regional NSW.

As a regulator, TfNSW understands the need to be agile and proactive in response to new and emerging technology and business models. Governments around the world are constantly being challenged by both the speed and complexity of change. The ability to adapt processes and capabilities to meet these challenges has become important.

As an employer of over 25,000 people, TfNSW is conscious of the impact of changing workplace trends. This has been acutely demonstrated during the COVID-19 pandemic. Like any other employer, TfNSW is also subject to the changing demands that technology, innovation and automation can have on workforce capability profiles.

2 Strategic transport context

2.1 Future Transport 2056

The Future Transport 2056 (FT2056) strategy sets the NSW Government's 40-year vision to create a modern and connected roads and public transport network that gives people the freedom to choose how they get around, no matter where they live and work. FT2056 will guide transport investment over the longer-term.

FT2056 is focused on six key outcomes for the future of mobility in the state, which together aim to positively impact the economy, communities and environment of NSW.

The Services and Infrastructure Plans set customer outcomes for Greater Sydney and regional NSW for the movement of people and freight to meet customer needs and deliver responsive, innovative services.

There are a range of supporting plans that are issues-based or place-based that help to implement the FT2056 strategy across NSW.

2.2 10 Year Blueprint

The 10 Year Blueprint outlines where we will focus our efforts now and will help deliver our Future Transport strategy and vision over the next 10 years. The Strategic Priorities in the Blueprint list the essentials we need to set targets for and measure over time.

The Blueprint acknowledges that the transport landscape is likely to change more in the next 10 years than it has in the past 50 years, owing to influences like technology and data innovation that are accelerating across the transport sector (e.g. autonomous vehicles, point-to-point, car share, on-demand).

As a transport provider, TfNSW recognises the changing needs and expectations from those we serve require us to transform the way we operate. This is particularly relevant when considering the changing nature of work, including:

- higher expectations for working flexibly, and visible, connected leadership
- technology and automation emerging as both a challenge and opportunity for changing the nature of work and re-skilling for the future
- the need for digital tools to effectively manage and maintain a complex, interconnected transport system.

3 Travel patterns of people in NSW

3.1.1 Changing travel patterns during the COVID-19 pandemic

During the height of COVID-19, there was a significant reduction in travel across all modes.

There has been a strong return to road travel, with levels having stabilised at around 2-10% below the comparable time in 2019.

Public transport usage dropped by 80% during the lockdown period and is sitting consistently around 60% of pre-COVID levels in December and early January. Patronage and confidence in using public transport fluctuate in line with government restrictions, the severity of outbreaks and community transmission across Australia.

Between March and May 2020, TfNSW actively engaged with NSW employers to encourage off-peak travel. As a result, travel data shows a noticeable flattening of the daily curve with commuting peaks less prominent, critical to aiding physical distancing on the network.

TfNSW has commissioned research that will track the travel behaviour and attitudes of NSW residents over time to anticipate the impacts of greater propensities to work from home or work 'remotely'.

A study by the I-Move CRC covers the Australian population through a longitudinal data plan (commenced in March 2020) to understand responses from employers and employees to working from home until we reach some equilibrium (available at https://imoveaustralia.com/project/working-from-home-revising-metro-strategic-transport-models/)

Workers continue to return to the office, although working from home is predicted to endure. On average, workers are now working 2.0 days a week from home, down from 2.3 days in August and 2.6 days May. On average people expect to work 1.4 days at home post-COVID, compared to 0.9 pre-COVID.

While work from home (WFH) was an option for some people pre-COVID-19, the mass adoption of this practice during the pandemic is hugely influencing travel demand. It appears likely that WFH will continue to be a major driver for travel demand as most studies reveal that the majority of workers will continue to WFH for 2-3 days per week.

TfNSW is currently exploring the implications of these changes in demand across the transport network and for related infrastructure, and is also pursuing a range of options to support the travel changes. These include major expenditure on infrastructure and behavioural change campaigns encouraging the use of active transport, and exploration of initiatives seeking to encourage off-peak travel to 'flatten the peak' long associated with mass commutes into Sydney's CBDs.

Time and cost savings, and increased productivity and flexibility, are just some of the benefits that could be realised by NSW workers and businesses as the way we work changes in the wake of the pandemic.

TfNSW notes that the NSW Innovation and Productivity Council recently released its NSW Remote Working Insights report; a research report that unpacks the lessons of widespread remote working and sets out how work might look in the future. The report surveyed 1,500 remote workers to find out about their experience of remote work during COVID-19, and how they want to work in the future.

Key findings include:

- Half of the workforce can work remotely for at least two days a week, where only a small fraction did so previously.

- By working remotely, NSW workers save an average of 1 hour and 17 minutes per day by not commuting. Two days per week of remote work equates to over three extra weeks of annual leave, and about $860 in saved travel costs per year.
- Most who could work remotely reported higher productivity, but some work is not 'remoteable' (56 per cent), and collaboration and social isolation are key challenges for remote workers.
- NSW workers who can, want a balance with two to three days of remote work per week.
- A 'hybrid model' could combine the best aspects of remote work with the benefits of offices for collaboration, team-building, and non-remoteable tasks.

3.1.2 Keeping up to date with the latest travel trends

TfNSW prepares regular reports on network patronage using various data sources, including Opal data collected from the electronic ticketing system.

Top level patronage data for monthly trips by mode is publicly available on the TfNSW website with visualisations that show trends for Opal Trips on all modes of public transport by month, operator, contract area and card type.

https://www.transport.nsw.gov.au/data-and-research/passenger-travel/public-transport-patronage/public-transport-patronage-top-level

In response to businesses and employers wanting access to more data during the COVID-19 pandemic to assist with workforce planning and information for their staff, TfNSW developed Travel Insights.

Travel Insights is a publicly available interactive transport data visualisation tool that gives people the unprecedented ability to view and filter multi-modal opal data to help them understand the latest travel trends. Users have the power to view data by public transport mode, day of the week or key commercial centres in greater Sydney and regional NSW.

https://www.transport.nsw.gov.au/data-and-research/travel-insights

The Opal dataset is a rich source of patronage data and is managed carefully to ensure that customer's private data is kept confidential.

3.1.3 Travel Choices

Travel Choices is a free resource provided by TfNSW to help individuals, businesses and organisations prepare for and adapt to the changes to Sydney's transport network. The Travel Choices team provides support for those making the shift to more sustainable ways of moving into, out of and around Sydney.

To date, Travel Choices has worked with over 850 businesses and organisations across Sydney and has contributed to the 13% reduction in vehicles entering the CBD and the corresponding 14.7% increase in public transport trips during the morning peak (2019 stats, pre-COVID). This is sustained behaviour change year on year.

Travel Choices has developed a COVIDSafe Travel Choices initiative supporting large employers in Sydney as they plan and prepare during COVID-19 and for the new normal. The initiative responds to the needs of businesses and their employees to help them make the right decisions about if, when and how to travel for work at various stages during this period and beyond.

Recently, Travel Choices has been refocused to support businesses as their workforces transition back to their workplaces as part of the economic recovery phase.

4 Impact of technology on transport, ‘on-demand’ services and the 'gig economy'

4.1 Point to point transport industry

Changes introduced by the NSW *Point to Point Transport (Taxis and Hire Vehicles) Act 2016* and Regulation accommodated new booking technologies and changing customer expectations, while strengthening the safety obligations on industry. In doing so they provided scope for increased competition enabling new entrants to the industry and new models of service.

Change will continue to affect the industry. New personalised mobility solutions, like demand responsive transport and mobility as a service, are emerging. They will reshape the transport landscape, the relationships between the various stakeholders and customer expectations. Though the timeframe for full automation is uncertain, vehicles will progressively become more autonomous and safety benefits are anticipated from this. Data, access to it and its application to the transport network and services will be critical.

New technology will improve the safety of all vehicles and offer solutions for safety issues such as driver fatigue. These improvements will deliver benefits to the entire point to point industry, including drivers and passengers. For example, facial recognition and near field communications may offer solutions to make interactions between drivers and passengers safer by confirming the identity of the parties involved in a trip.

The regulatory framework provides room for this future. It enables industry to take advantage of new and emerging technologies and to shape their offerings to meet customer needs and expectations. It gives service providers flexibility to build safety management systems tailored to suit the risks of their businesses.

It should be noted that the Act and Regulation do not provide the Point to Point Transport Commissioner with powers to regulate the employment relationship service providers have with their drivers. The focus on these laws is industry safety and accountability.

4.1 ‘Gig economy’

The NSW Government announced a committed Taskforce to ensure the safety of gig economy workers on 24 November 2020. TfNSW will work with NSW Police Force and SafeWork NSW to tackle this emerging road safety risk.

The NSW Government is committed to ensuring the safety of all road users. However road safety is also a shared responsibility. All road users and those that employ riders and drivers need to share the road safely. We all play a part in ensuring everyone gets home safely.

TfNSW is continuing to engage with employers of food delivery riders around embedding road safety practices in their workplaces, educating their workers on safe riding behaviours, and promoting their businesses as ‘good practice’ road safety ambassadors through adopting the Road Safety and Your Work Guide and accessing online resources produced by TfNSW .

The current COVID-19 environment has visibly seen an increase in food delivery riders using our roads. Sadly, there has also been an increase in food delivery riders being killed and injured on our roads.

While some details of recent crashes are still being confirmed by police, preliminary information shows that so far in 2020, five food delivery riders have been killed on our roads. This includes three bicycle riders and two motor scooter riders. While NSW crash data may not identify all crashes involving delivery riders, the data shows there has been an increase

in crashes involving food delivery bicycle riders and motor scooter riders in 2020 compared to 2019.

4.2 TfNSW's Technology Roadmap and use of technology

Advancements in technology will continue to make it easier for TfNSW to understand the state of the transport network and assets. The Technology Roadmap highlights the importance of using sensor technology to understand the state of transport assets and customer behaviours. This will mean less need for visual inspections for our workforce, shifting future skills to data analysis to maintain the transport network.

Incorporating this information into a Digital Twin will mean data about transport assets, real-time information about our services location and capacity can be accessed in one place. It will lead to better evidence-based decisions made through intelligent decision engines that will incorporate algorithms and predictive analytics. Introducing these capabilities will require TfNSW to shift the skills of our workforce to recognise the importance of data science, cyber security and software development skills.

This data will come together in customer facing platforms like Opal Travel. The recent release of the Opal Travel smart notifications provides a glimpse of how customers will be given more information to make informed choices about how they travel. In an 'on-demand' economy where the peak travel period is flattened and more people are flexible about when they can travel, information about travel preferences and real-time services information will provide a more efficient transport system and economy.

TfNSW has shifted from a transport agency providing transport services, to a network facilitator using data, analytics and technology to enable an efficient and safe modern transport network. There are skills and expertise within the labour market that will undoubtedly be relevant and transferable in data analytics, artificial intelligence and using complex applications in system architecture and design. These skills will be required within transport agencies of the future and across the broader labour market.

The use of technology to mechanise maintenance tasks, remove workers from higher risk work sites and improve environment safety is actively being pursued within TfNSW. For example, drone technology usage in road and rail maintenance is providing safety and efficiency benefits and, whilst there is more work to do to explore the full potential, benefit is able to be realised now.

The use of Auto Train Warning Systems is being trialled within Sydney Trains, which removes the need for 'lookouts' to stand near the track and warn workers. Remote controlled trains are operating on the Sydney Metro network. Robots are used for paint removal in hard to get to areas and inaccessible areas of the Sydney Harbour Bridge. Live traffic maps provide advice for road freight operators, while real time network disruption information via the Rail Operations Centre ensures rail operators can respond and adapt to network delays.

The use of digital engineering to drive safety and more efficient construction and maintenance practices is well underway within the project delivery teams. This allows virtual review of options and scenarios to be explored prior to committing considerable project funding with the opportunity to change the maintenance regime.

4.3 Cyber-security

As our cities and regional areas become more connected and technology is deployed to make lives easier, a greater emphasis will need to be placed on security and privacy of the data in use across NSW. Personalised timetables for customers require data about individual's movements as well as personal preferences. These are attributes that are very helpful for developing personalised services, but also may be considered an intrusion of

privacy. Care must be taken to protect this data and ensure the proper security controls are deployed to protect this.

Technology deployed in our cities and towns needs to be built with security and privacy by design. News articles are regularly written about how millions of records of personal information are lost due to simple misconfigurations in settings of storage services or home technology.

Internet of Things (IoT) devices will be deployed across our cities to assist with everything from rubbish removal that tell city workers when bins are full to autonomous vehicles transporting people from home and office. These devices need to be built secure and fail safe.

It is incumbent on all of us as enablers of smart cities to ensure IoT devices are built by trusted vendors that have vetted supply chains. This will provide a level of assurance over the devices we deploy across our cities and how data is stored, processed, and transacted in accordance with our security and privacy regulations.

4.4 Open Data

Customers are now being provided with more data than ever before with real-time information through Apps, social media and Transport Info, information screens, messaging via posters, digital signage and decals at stations, bus stops and wharves.

The Open Data Hub has placed TfNSW at the forefront of sharing data. Since implementation in 2014, the data and technical assets on the open data hub have been accessed almost 8 billion times. It has established an active community of 43,0000 transport of open data users that have access to wide range of data set, most in real-time, that provide insights into customer behaviour.

The data that is available has allowed developers to independently deliver real-time mobile apps to 8 million unique customers. These mobile phone apps like NextThere, Anytrip and Tripview have become ubiquitous with the customer experience and been a driver for improvements in customer experience.

The open access means researchers and academics have ready access to high value data such as privacy protected Opal system data, household travel and patronage data that can power their research with easy and no cost access.

TfNSW has a newly established Advanced Analytics and Insights Unit which will be expanded to include increased capability around data governance, business intelligence and data engineering. There is already a highly specialised unit who manage geospatial data however other specialist roles including data engineers, data architects and full-stat developers will be critical to the success of a modern transport agency.

4.5 Connected and automated vehicles

Automated vehicles will most likely be first deployed to fill service gaps in the transport network including providing first/last mile passenger shuttles, and integrating with other transport modes. This limits impacts on transport sector jobs while providing customer benefits and potentially shifting the types of jobs available in the transport sector. This is demonstrated in TfNSW's regional trials in Coffs Harbour, Armidale and Dubbo.

TfNSW does not anticipate that automated vehicles will have a significant impact on jobs in the shorter term however over the next decade, with an increase in the proportion of the vehicle fleet being automated, this is expected to change.

Automated vehicles have the potential to offer opportunities to create new business development, investment and employment opportunities in a range of transport and non-transport sectors. A key issue affecting the development and deployment of automated

vehicle technology in Australia is a skills, capability and investment shortage in this region, with leading developers located overseas. This issue has become more pronounced because of COVID-19 and restrictions on international travel. While there are already a number of leading technology developers here in Australia, investment in this sector will help develop highly skilled jobs into the future that will ensure that as automated vehicles become more commonplace, they are being developed with Australian use cases in mind.

TfNSW has established the Smart Innovation Centre to trial Connected and Automated Vehicle technologies and expanded its vehicle testing capability with a new world-class facility at Cudal to provide simulated open road and junctions for technicians to test new and emerging technologies.

A Digital accelerator has also been established to facilitate direct collaboration between the public and private sectors, connecting teams from TfNSW with industry, researchers, entrepreneurs and start-ups in the new and emerging technology areas, such as Connected and Automated Vehicles.

TfNSW has partnered with industry, researchers, local councils and businesses to develop and co-deliver trials in Sydney Olympic Park, Armidale, Coffs Harbour and Dubbo. Currently, automated vehicle projects in Australia are focused on understanding the technology, infrastructure and customer value of the technology through trials while building local capability. These trials also give insight to the type of regulating and testing needed.

As part of the establishment of these facilities, TfNSW has had to bring in new skills around design thinking, machine learning and artificial intelligence, and systems engineering.

4.6 Electrification of the public transport fleet and other vehicles

The transition to zero emission vehicles (EVs), including electric and hydrogen, is a major transformation which brings many opportunities, including new industry development and employment growth in the transport, energy and technology sectors.

EVs and their associated industries also offer new opportunities for growing local businesses and employment. These include companies supplying and installing charging stations, EV components and systems, research and development, through to those using EVs in new transport services. Battery repurposing and recycling are emerging industries that will benefit from EV growth.

The NSW Government has partnered with the NRMA to deliver at least 20 additional electric vehicle fast chargers to the existing regional network along the state's major highways. This will help create the most comprehensive regional charging network in the country, opening regional NSW up to electric vehicle owners.

In October 2019, TfNSW announced that it will commence the transition of Sydney's bus fleet to zero emission buses. This transition provides an opportunity to support local bus and component manufacturing and assembly in NSW.

4.7 Emerging aviation technology

Emerging aviation technologies such as drones, electric vertical take-off and landing (eVTOL) vehicles have evolved rapidly over the past five years and have the potential to deliver significant economic and social benefits in both urban, regional and remote parts of NSW. In addition to the delivery of goods, these emerging technologies are already being used in agriculture, construction, mining, emergency and disaster management, medical support and law enforcement.

The drone and eVTOL industry in Australia is projected to grow significantly with future technological innovation that will enhance battery life and increase the range and speed of

such vehicles. With these and possibly other innovations imminent, the legal and policy framework regulating these vehicles needs to be flexible and adaptive to ensure that regulators can keep pace with the changing nature of the industry.

TfNSW has been conducting eVTOL trials in both operational, maintenance and planning situations.

Operationally, drones enable quick and continual assessment of a transport incident giving operators more flexibility and precision in resources deployed to manage the event. Drones fitted with camera and LiDAR technologies (light detection and ranging) provide maintenance teams the opportunity to inspect and assess more transport assets, more efficiently. Planners can use drones to better understand areas of congestion and inefficiency in the transport network.

New workforce skills are required to understand and action the insights from the drone technologies. These skills will be a combination of data science and transport network planning capabilities. Understanding the best way to deploy, operate and maintain them will also new skills in electronics, camera technology and aeronautic engineering. Certified remote pilots need to be employed to operate the drones themselves.

It is noted that the Australian Government is developing a national framework to manage new aviation technologies such as drones and eVTOL vehicles, and will develop a National Emerging Aviation Technologies Policy as the first step in this process.

Regulatory responsibility for drones sits with the Commonwealth Civil Aviation Safety Authority. While certain prescriptive rules may need to be retained, the level of prescription and compliance burden contained in the current regulatory regime may continue to stifle innovation and constrain businesses' ability to explore new opportunities to embrace drone technology in their business practices.

5 Impact of technology on the workforce

5.1 Rail industry

The rail industry in Australia and New Zealand is already experiencing skills shortages as investment grows in new rail infrastructure and rolling stock and operations expand, with the number of train drivers, controllers, track workers, signalling engineers and technicians, maintenance workers, electrical technicians and tunnellers not keeping up with growing demand. From a future skills perspective, the industry is also suffering from a chronic shortage of trainers and assessors.

The skills challenge is intensified by the need to not only meet growing demand, but also to replace skills lost to an ageing workforce over the coming decade. The quantitative modelling for this report indicates that over 20 per cent of the existing workforce will retire by 2028, adding substantially to existing workforce gaps across the industry.

New technologies are driving demand for new or expanded skills in the rail industry and this process will accelerate in coming years. In an increasingly technologically-oriented world, the rail industry faces strong competition for technical skills, and will need new strategies to attract these skills into an industry still perceived as old and male dominated. In turn, the new technologies provide an opportunity to increase the diversity of the rail workforce. Conversely, new technologies will also see demand for some existing rail occupations drop

The rail industry, in partnership with government, is making some progress in developing skills the rail industry needs, however much more needs to be done now and in coming years to place rail workforce capability on a sustainable path.

The Australasian Railway Association hold useful insights to the future of rail:

https://ara.net.au/sites/default/files/uploads/Report%20-%20Finding%20the%20fast%20track%20for%20Australasian%20rail%20innovation%20-%20October%202020.pdf.

The ARA has also published a relevant skills study:

https://ara.net.au/ara-skills-capability-study.

5.1 Transport for NSW workforce

At TfNSW, we are working differently so that our people can deliver positive outcomes for our customers and communities. We are creating a workplace that is more collaborative and connected, and one where our people are empowered, have choices, and one that enables TfNSW to put people at the heart.

TfNSW is committed to building a culture where working flexibly is a part of how we do business, enabling us to attract and retain a high performing and diverse workforce. TfNSW recognises there are innovative and flexible ways of working that meet business objectives at the same time as maintaining productivity, motivating staff and encouraging workforce participation and inclusion.

The COVID-19 pandemic has illustrated that we need a labour force that has the ability to collaborate in a very agile way, to manage crises informed by a broad range of data that is available in real-time to rapidly changing environments. This will change the number and skill set of the current workforce, to one that moves away from manual tasks and towards a more analytical, professional set of skills. A balance needs to be struck between a short term need for ‘traditional’ skills whilst innovation comes online.

In March 2020, we asked people across TfNSW to work very differently and quickly in response to the pandemic. Almost overnight, we moved from 700 people working remotely to over 10,000 staff members. Sydney Trains, for example, established in-transit

disinfectant teams to cover every train four times per day, recruiting and training 200 additional officers from out-of-work sectors including gyms, hospitality and airline industries.

We gave the opportunity for a pilot group of approximately 900 employees to have greater opportunity to choose how they want to work and the location to complete their work tasks. This was underpinned with access to new technology to improve collaboration both virtually and within a physical office environment. We also conducted a series of Pulse Check surveys with all our people throughout the pandemic. The results found that self-reported productivity has not been negatively affected – in many cases it has increased.

Choice is critical to enable individuals to adapt best to their own personal circumstances including the nature of their role, where they live, how the rest of the team liked to work and other personal interests and responsibilities. TfNSW's people would like a hybrid approach – a few days in the office and a few at home - with 90% of people (based on our pilot work) are keen to only work in an office for two days a week or less. The main purpose of attending an office is for the purpose of collaborating with others.

Moving forward TfNSW is taking a phased approach to give our people more flexibility and choice with how and where to use our workplaces, while continuing to ensure we all stay safe. The challenge for TfNSW is the need to re-establish our office accommodation to support this – i.e. matching the workplace to the types of work needed to occur, support our people to understand the change in new ways of working, capability uplift for our people and ensure that this approach is sustainable with a focus on wellbeing in a more digital environment. It also provides greater connection for our people, including regionally based staff.

TfNSW is investing significantly into the future of work through understanding the future capabilities that are required, aligned with the outcomes through FT2056. We understand as time passes, technological improvements will be introduced into the workforce and what this means for our workforce, workplace, and outcomes delivered becomes critical to our success. This workforce planning will ensure that we understand where opportunities are, and plan accordingly based on our pipeline of work – i.e. construction occurring over the next ten years, or the future of automation.

This approach goes hand-in-hand with learning and development. We need to be able to upskill our people to support the change in the workplace through these future capabilities. What that means is focusing on what the types of work required in the future are, to support our service delivery, and how can we build that capability within.

COVID-19 has pushed TfNSW forward in workforce needs and its mobility of learning with a more blended training approach and inclusion of online learning. This short change has improved through the digitisation of existing learning content and offerings. The future of learning will see mobility of skills across the different types of work TfNSW undertakes – such as rail to road and greater planning, to understand the capability needs with an enterprise-wide approach.

TfNSW has a significant entry level program where we are introducing school and university leavers into the workplace through experience-based rich opportunities. Careful consideration is also given to the types of university leavers we look to attract, where we know there are skill and capability gaps. This, combined with other programs, supports our diverse workforce approach.

The COVID-19 pandemic and the recent changes to the nature of work has also brought mental health issues into sharp focus and this needs to be considered as we define the future of work and the safety implications for our people, customers and communities.