

CASE STUDY: ANAPLAN AND QUEENSLAND RAIL

Close Talent Gaps With Strategic Workforce Planning and Innovation

Employers in Any Industry or Region Can Learn Lessons
on Long-Range Planning from Queensland Rail



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AT A GLANCE

Organizations that don't have the right people or enough people in place can't execute effectively. Talent gaps—whether in sales, customer service, technical positions, administrative roles, teaching posts, or executive ranks—hold organizations back, undermine performance, hinder customer satisfaction, and damage brand reputations. That's why the workforce planning lessons learned from Queensland Rail (QR), a quasi-governmental rail operator in Australia, can be applied to any industry in any country.

QR's talent gap happened to be in engineering and technical roles. The organization's embrace of strategic workforce planning is helping close the gaps, but the lessons learned are not just about hiring more effectively and proactively. Indeed, as is the case in so many industries these days, there just aren't enough people in the talent pipeline to close QR's talent gaps through hiring alone. But by collaborating and co-innovating with business leaders and business units within the organization, QR's strategic workforce planning team is reducing the burden on internal talent while also freeing existing staff from time-consuming rote manual work by using sensors, drones, and other emerging technologies that promise to transform many industries.

AT A GLANCE

Problems	<ul style="list-style-type: none">• Long-range planning was in place for two roles at QR, but the planning didn't drive action, leading to a critical talent shortage.• A new planning initiative across multiple roles revealed looming talent gaps for key posts, including highly trained engineers.• Competition for talent was set to increase due to numerous infrastructure and rail improvement projects across Australia.• Educational and industry trends were widening the gaps.
Solutions	<ul style="list-style-type: none">• Using Anaplan for strategic workforce planning, QR got a better handle on its long-term talent needs across multiple roles.• QR revised pay plans, partnered with engineering consulting firms, and is promoting big projects to attract more talent.• Collaborating with business leaders, QR is scenario-planning for the use of remote sensors and drones to free up existing staff.• QR relaunched apprentice and training programs that will graduate 55 trade apprentices and 31 engineers in 2023.
Benefits	<ul style="list-style-type: none">• QR's two-pronged approach of bolstering hiring and grooming talent while also reducing hiring needs is closing the gap.• Continuous, collaborative planning with the business has forged a trusting relationship that is paying long-term dividends.

Business Themes



New C-Suite



Future of Work



Data to Decisions



Technology Optimization

THE ORGANIZATION

Queensland Rail is a 150-year-old quasi-governmental organization based in Brisbane, Australia. The organization is accountable to the government of Queensland, but it's run by an independent board and executive leadership team. QR oversees a 6,660-kilometer (4,100-mile) network of passenger and freight lines that traverse the state, which has a land area five times as large as Japan and 2.5 times as large as Texas. It maintains 152 stations and serves more than 44 million customer trips on commuter lines serving Brisbane, the state capital and a major city with a population of more than 2 million, as well as smaller cities such as Townsville and Cairns. QR freight lines move 15.7 billion gross kilometric tonnes (17.5 billion tons) of commodities per year.

Queensland Rail

- **Headquarters:** Brisbane, Queensland, Australia
- **Number of employees:** 7,500
- **Industry:** Quasi-governmental agency overseeing all passenger and freight rail lines across the state of Queensland, Australia
- **Year founded:** 1865
- **Network:** 6,660 kilometers (4,100 miles) of track
- **Commuter loads:** 44 million passenger trips per year
- **Freight loads:** 15.7 billion gross kilometric tonnes (17.5 billion tons) of commodities moved per year

Among QR's 7,500 employees are train drivers (known as engineers in North America); guards (known as conductors in North America); engineers (specifically mechanical, electrical, and civil engineers and rail-specific rolling stock and signal engineers); and "tech and trade" workers, including electricians, mechanics, track workers, and track inspectors.

The QR human resources staff of roughly 100 included a planning team, but by 2016 that team had dwindled to one person (through attrition) and its planning efforts were not driving business outcomes.

As revealed in this case study, strategic workforce planning has been reinvigorated and expanded at QR over the last five years. Today there's a planning team of four, including Philippa Johnston, manager of people planning and inclusion. A four-year veteran of QR, Johnston leads enterprise strategic workforce planning and talent and succession as well as diversity and inclusion strategy, policies, and programs. Among her reports is Trachelle Hart, principal workforce planner, who's a 2.5-year veteran of QR.

The lessons learned by QR are by no means just for rail operators or quasi-governmental organizations. They apply to any company in any industry and in any country that is experiencing staffing shortages and long-term talent gaps. Indeed, one key lesson of this case study is that short-term talent shortages are invariably tied to a lack of long-term, strategic workforce planning.

THE CHALLENGES

Long-term workforce planning was not new to QR, but by 2016 a small team's limited efforts focused on train drivers and guards had reached a breaking point. The planning team had dwindled from less than a handful to just one person. Planning processes were "a checkbox exercise" at that point, according to Johnston, who joined as manager of workforce planning in 2018. The planning satisfied state requirements, she says, but plans were not tied to outcomes, such as hiring and training initiatives, and "the business wasn't seeing value."

As predictable (but unheeded) waves of retirements swept through QR's aging workforce, a critical shortage of hundreds of drivers and guards emerged. The shortage had an also-predictable impact on the frequency and timeliness of commuter rail line services. Negative media headlines ensued, which served as a wake-up call for QR's management and the board.

From 2016 to 2018, QR made progress with drivers and guards, by restarting its strategic workforce planning program. This time around, the planning team ensured that "we were embedding the outcomes that would actually support the business," says Johnston.

The driver and guard shortage also sparked broader, long-term assessment of talent requirements across the organization, starting with engineering positions. To get a better handle on strategic requirements five years out, the planning team looked beyond its own historical information and long-

By 2019 QR executives recognized that they faced what they soon called "the cliff moment": the point at which there would be a significant gap between engineering talent projected to be on staff and the workforce that would be required to carry out ongoing and planned new projects.

range plans for infrastructure investment. Third-party research from BIS Oxford Economics—a leading provider of industry research, analysis, and forecasting services in Australia—pointed to a looming shortage of engineering talent across the country, particularly in the rail sector.

The external research revealed that Queensland was not alone among Australian states in having big plans for expanded rail service. Projected population growth in Australia’s urban centers, coupled with climate-change and environmental planning, had fueled ambitious projects for rail expansion across the country to get more cars off the road.

Meanwhile, long-term demographic trends also didn’t look favorable. The percentage of Australian high school students going into engineering had steadily declined since the 1970s. And as for the students who *were* going into engineering, “they didn’t see rail as cutting-edge,” says Johnston. “We’re also competing with the mining industry, which tended to offer higher pay.”

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Among the planned initiatives was Cross River Rail, a major project (now under way) involving the construction of two 10.2-kilometer (6.3-mile) train tunnels crossing under the Brisbane River. A second, related project is implementation of the European Train Control System (ETCS), which will be put to use within the new tunnels and across Brisbane’s commuter train network to improve safety.

THE SOLUTION

Anaplan was an incumbent planning platform at QR, used for driver and guard workforce planning as well as for training and fatigue management planning. In the wake of the 2016 driver and guard shortage, QR recognized that that crisis wasn’t due to the tools being used. The problem was the lack of collaboration and integration with the business. The plans “highlighted risks around the aging [driver] profile, but they didn’t, with concrete accuracy, predict when we were going to feel the shortage on a day-to-day basis,” Johnston explains.

QR's first step toward closing the critical driver gap was to use available Anaplan forecasts and more up-to-date data from the business to drive future planning for its existing driver schools. Refined forecasts revealed that QR needed 600 new drivers within two years.

"We had to go through a significant recruitment campaign, and we had to prove, with a level of accuracy, to the government that we needed a significant number of new people to go into the schools," Johnston explains. "We knew how long it would take these people to complete that training and go through route familiarization, so we could predict how long it would take those recruits to flow into the available supply of drivers."

QR's success in turning around driver and guard planning informed its approach to workforce planning tied to engineering roles, an initiative begun in 2018. Tech and trade roles, such as electricians, mechanics, track workers, and track inspectors, were added to the strategic workforce planning initiative in 2020.

To avoid the disconnects of the past, the workforce planning team established a steering committee involving project leadership, project teams, key business stakeholders, and model builders from the beginning. To drive accurate modeling, the team incorporated as many data inputs as possible, including capital works planning forecasts from QR's project management office, maintenance planning data for tech and trade roles, short-term workforce plans previously siloed in Microsoft Excel, and full-time-equivalent (FTE) data from QR's SAP Human Resources Information System. It also included third-party data, such as the research obtained by BIS Oxford Economics.

"The good thing about Anaplan is that it helped us transform many types of data to be used to build a robust working model," says Johnston. Robust and reliable data was also essential to gaining the trust of the business. "We had to be able to consume that data and drill down to very specific questions that people in the business had. These are engineers, so they really tested us on the data."

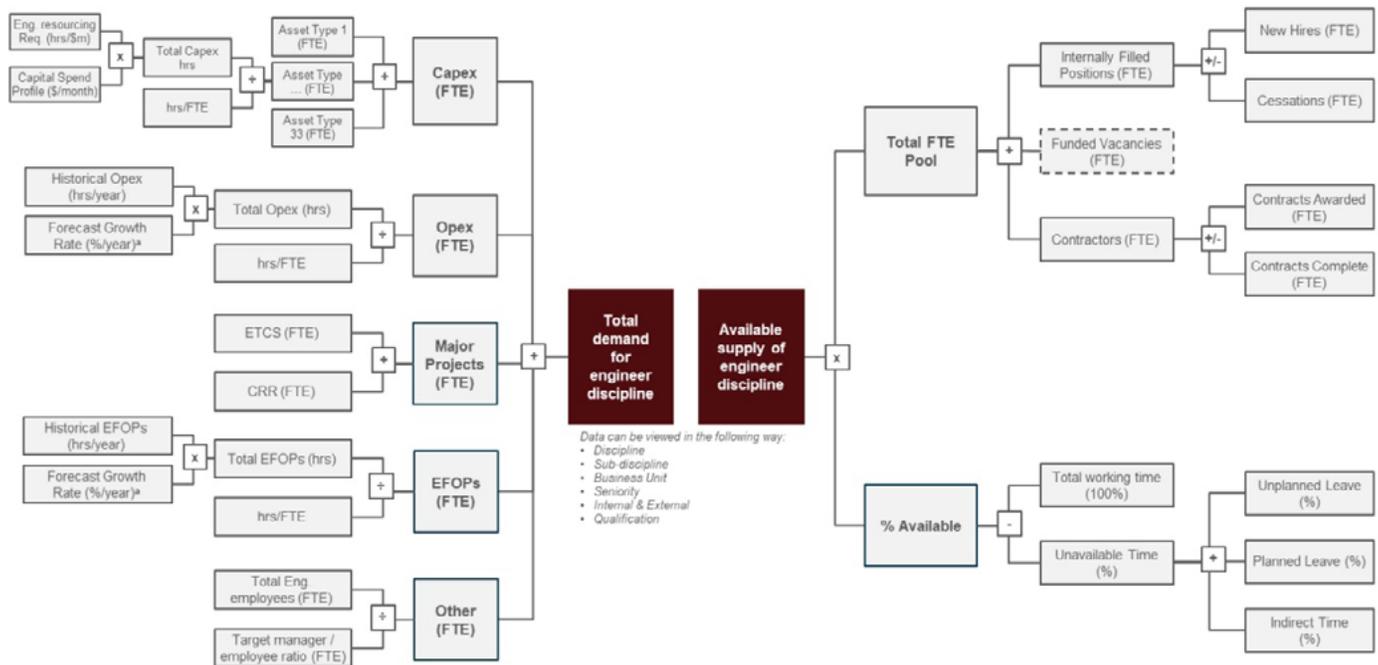
The Technologies

- **Anaplan**, used for strategic workforce planning as well as for operational planning for training and apprentice programs and (driver) fatigue management
- **SAP Human Resources Information System**, the main source of full-time-equivalent and historical trends data
- **Tableau**, used for executive-level reporting and projections tied to Anaplan models
- **Drones and remote sensors**, deployed to minimize, if not eliminate, employee travel time, onsite inspections, and assessment delays and to drive predictive maintenance

The resulting model, built in Anaplan and shown in Figure 1, compares the anticipated available supply of existing engineering staff, shown on the right side of the model, with the anticipated demand across five core areas of demand:

1. Ongoing capital expenditure (capex) projects
2. Projects overseen by the project management office
3. Operational expenditures (opex) tied to maintenance
4. Major projects, such as Cross River Rail and ETCS
5. Externally funded projects

Figure 1. The Model Queensland Rail Developed in Anaplan Compares Total Demand for Engineers Over Five Years With the Projected Available Supply



Source: Queensland Rail

The supply side of the model accounts for shrinkage—retirements and separations as well as planned and unplanned leave. Employee time is also taken up by administrative tasks and training, and that, too, reduces supply. The modeling work in Anaplan also helped QR with overtime analysis. “We’re trying to educate the business on the different workforce strategies available to gain workforce efficiencies,” explains QS Principal Workforce Planner Hart.

The modeling efforts clearly revealed and provided hard data on the cliff—the significant gap between supply and demand that QR faced over the team’s five-year planning horizon. Demand for engineers was projected to increase by an average of 16.6% per year, starting in 2019 and extending through 2024. Demand was on track to far exceed available supply—that is, unless QR took steps to change the demand and supply dynamics.

THE IMPACT

As work got under way to try to change the supply and demand dynamics, the worldwide COVID-19 pandemic hit. Also complicating matters in recent years has been a pattern of wildfires across Australia as well as flooding that was particularly acute in Queensland. Although the population of the state is centered in and around Brisbane, the land area is huge, and freight and long-distance passenger routes have been established, requiring yet more engineering and tech and trade labor.

Despite these challenges, QR is starting to see the results of long-term planning. As a start, the team revised remuneration to better attract key talent. At the same time, it recognized that there was just no way it could hire enough engineers, given demand across Australia. So QR is partnering with engineering consulting firms to fill part of the gap.

“These firms can design signal systems, for example, and help with commissioning [of completed projects],” says Johnston. “QR will continue to hire design engineers and other engineers who can focus more on testing.”

Training programs have also been reinvigorated to help close the talent gaps. In 2019 QR relaunched an apprentice and graduate program aimed at increasing the supply of tech, trade, and engineering talent. In a sign of progress, the program’s class of 2023 is expected to include 55 tech and trade

Figure 2. Queensland Rail Has Learned to Promote the Appeal of Interesting Engineering Projects and Public Service Through Websites and the Media



Source: Queensland Rail

apprentices and 31 engineering graduates. To attract even more engineers (and to counter the “not-cutting-edge” perception), QR is highlighting major projects such as Cross River Rail in the media and, as shown in Figure 2, through various QR websites that support recruiting.

“Engineers tend to follow big projects, and they want to be a part of them,” Johnston explains. “Even if [engineers don’t] have a lot of loyalty to organizations, they are attracted to interesting work, and we knew that was one way we could attract more talent.”

Visionaries at QR were also hoping to close talent gaps by changing how people work, with the aid of emerging technologies such as drones and sensors. That promised to upend old assumptions about how many FTEs will be required for various roles.

“If we have a train derailment due to a flood, for example, we can now send out drones to do the first-level assessment of impacts,” explains Johnston. Drone inspections save time and enable QR to send out the right equipment and resources needed to restore service.

In another example of emerging tech, recording sensors are being installed on trains. Vibrations picked up by these sensors are coordinated with geospatial and historical data to pinpoint changing

track conditions needing proactive attention. “In the past, we had inspectors literally walking the track to look for potential trouble spots,” says Johnston.

The workforce planning team’s scenario modeling helped deliver hard data on these new technologies that was useful in changing people’s old assumptions. “People, in many cases, are inclined to interpret or predict the future based on the way things have always been done in the past, but the way we operate today is not the way we’re going to need to operate tomorrow or in five or ten years’ time,” says Johnston.

THE TAKEAWAYS

Queensland Rail and its workforce planning team learned many lessons during the driver and guard crisis of 2016 and the subsequent 2018 and 2020 launch of long-range strategic planning for engineering and tech and trade roles. The first and most important lessons related to partnering with the business:

1. **Ensure that the business takes ownership.** The workforce planning team made it clear to the business that it was there to facilitate planning and to build and maintain the models but that the business owns the data and the models.

“It was crucial to underscore that accountability for validating the data sat with the business,” says Hart. “The workforce planning team was accountable for maintaining the data and helping to streamline processes for the business and to minimize the impact of refresh cycles.”

2. **Make sure that the business understands the models.** “It’s really important for the business to understand the inputs that are going into the FTE calculations,” says Hart. “If they can see exactly what makes up that FTE calculation, they can better understand, because it’s in their language.”
3. **Favor long-range, strategic planning over short-term planning.** In the absence of long-term (five-year), strategic planning, QR was reliant on short-term (six-month to three-year) tactical planning done in spreadsheets. That shortsighted approach contributed to excessive overtime and unanticipated staffing shortages. QR still has teams doing short-term planning, but their data rolls up into the long-term plan, and reactive hiring and overtime have been reduced.

4. **Keep iterating to improve model accuracy.** QR's workforce planning team knew and accepted that models wouldn't be perfect out of the gate. Here, too, ongoing collaboration was vital, because the business itself didn't have solid data and a clear understanding of what to expect on the demand side tied to major projects.

"Projects often require different skills and skill levels at different times, so there were some quite complex calculations as well as some unknowns to the business," Johnston explains. "Anaplan enabled us to do some of the heavy lifting of the number crunching and calculations, but we didn't have it perfect yet. Eventually, teasing things out through conversations and discovery work, the workforce planning team was better able to understand the demand and the impact these big projects were going to have on our organization."

5. **Present the right level of data to the right audience.** It's helpful if the planning platform gives you plenty of reporting and visualization options. QR took advantage of Anaplan's integration with Tableau to help with executive reporting. "Our top executives don't want to get down into the weeds of the Anaplan model," says Hart. "They just want to see supply and demand, what the gap is, and where they need to improve within their business units. We use Tableau to provide a very visual snapshot for our senior leaders."

THE RECOMMENDATIONS

In Constellation's view, people and culture changes may be the biggest impediment to building a modern planning-driven, agile organization. To be agile and proactive, build cross-functional teams including the business. As the workforce planning team at QR discovered, it had to ensure that accurate data was available from the business and then it had to build trust in the models.

Here are three other recommendations for evolving your planning technology and culture:

- **Don't let perfection get in the way of productivity.** Think of your deployment as a journey rather than a destination. Start small with a focused area or operating unit to get familiar with the platform before taking on the huge challenge. Even then,

focus on getting into production with the 80% of business requirements that are crucial. The other 20% and the final fit and finish can wait. The planning team and collaborators will only benefit from experience gained in using the platform.

- **Make the most of automation capabilities.** Whether it's capturing the latest data or calculating the latest key performance indicators (KPIs), automate wherever possible. Here's where consultants and systems integrators can help, drawing on their experience with built-in or third-party automation capabilities. Time saved on repetitive drudgery can be returned to higher-value planning activities.
- **Focus on the future.** When *plan* is a verb, the focus is on active and ongoing modeling, forecasting, and analysis. Stay focused on the future and on getting to your desired destination. If your business can be likened to a train, think of planning, forecasting, and analysis as the engine and not as the caboose.

ANALYST BIO

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Vice President and Principal Analyst

Doug Henschen is a vice president and principal analyst at Constellation Research Inc. focusing on data-driven decision-making. His Data to Decisions research examines how organizations employ data analysis to reimagine their business models and gain a deeper understanding of their customers. Data insights also figure into tech optimization and innovation in human-to-machine and machine-to-machine business processes in manufacturing, retailing, and services industries.

Henschen's research acknowledges the fact that innovative applications of data analysis require a multidisciplinary approach, starting with information and orchestration technologies; continuing through business intelligence, data visualization, and analytics; and moving into NoSQL and big data analysis, third-party data enrichment, and decision-management technologies. Insight-driven business models and innovations are of interest to the entire C-suite.

Previously, Henschen led analytics, big data, business intelligence, optimization, and smart applications research and news coverage at *InformationWeek*. His experiences include leadership in analytics, business intelligence, database, data warehousing, and decision-support research and analysis for *Intelligent Enterprise*. Further, Henschen led business process management and enterprise content management research and analysis at *Transform* magazine. At *DM News*, he led the coverage of database marketing and digital marketing trends and news.

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Organizational Highlights

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- Experienced research team with an average of 25 years of practitioner, management, and industry experience.
- Organizers of the Constellation Connected Enterprise—an innovation summit and best practices knowledge-sharing retreat for business leaders.
- Founders of Constellation Executive Network, a membership organization for digital leaders seeking to learn from market leaders and fast followers.



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