



AUDITOR-GENERAL'S INSIGHTS

30 September 2020

Delivering successful technology projects

Report 7: 2020–21

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- provides professional audit services, which include our audit opinions on the accuracy and reliability of the financial statements of public sector entities and local governments
- provides entities with insights on their financial performance, risk, and internal controls; and on the efficiency, effectiveness, and economy of public service delivery
- produces reports to parliament on the results of our audit work, and on our insights, advice, and recommendations for improvement
- conducts investigations into claims of financial waste and mismanagement raised by elected members, state and local government employees, and the public
- shares wider learnings and best practice, from our work with state and local government entities, our professional networks, industry, and peers.

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The Honourable C Pitt MP
Speaker of the Legislative Assembly
Parliament House
BRISBANE QLD 4000

30 September 2020

This report is prepared under Part 3 Division 3 of the *Auditor-General Act 2009*.



Brendan Worrall
Auditor-General



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Contents

Auditor-General's foreword	1
In brief	2
Actions	3
1. How successful are technology projects?	4
2. How can we improve success rates of technology projects?	9
3. Appendices	17
A. Entity responses	18
B. Project details	41
C. How we prepared the report	52

Auditor-General's foreword



There has been a great deal of interest in the success and delivery of technology projects across the public sector. The Queensland Audit Office (QAO) prepared this report to share its insights with all entities so they can apply crucial learnings to each of their respective projects.

Given the value of the investments in technology projects, and the economic impact of the COVID-19 pandemic, public sector entities must ensure that they learn from past experiences. The pandemic has reinforced the need for entities to take stock, and identify new, more efficient (technology enabled) ways of delivering their public services.

Earlier this year in my February report on the state's finances, I reported that the Queensland Government's financial performance has reduced, with expenses increasing at a greater rate than revenue. The current economic climate makes it more important than ever to ensure that the significant money invested in technology projects delivers value for the community.

This insights report builds on some of my past reports, which cover monitoring and managing ICT projects, digitising public hospitals, the reform of the state penalties enforcement registry, and health's finance and supply chain management system. I recognise that it is not easy to successfully deliver technology projects. Other governments here in Australia and internationally have also had their share of technology project failures and are looking to increase their success rates.

The government's hold on all non-essential new technology projects offers an opportunity for entities to consider the implications of COVID-19 on their priorities and operations so they can recalibrate. They now have time to ensure that they set up their projects to maximise success. To do this, they need to challenge and validate the need for their projects. This may require reassessing whether they have the right approach and skills.

As Queenslanders continue to become more reliant on working, learning, and doing business remotely, it will be essential for governments to use technology to transform their services. This has the potential to deliver savings through efficiencies in service delivery. I will continue to focus on technology transformations in my future reports.

A handwritten signature in black ink, which appears to read "B. Worrall".

Brendan Worrall
Auditor-General



In brief

Technology is critical in the delivery of government services such as health and education, and the provision of support functions like payroll and finance.

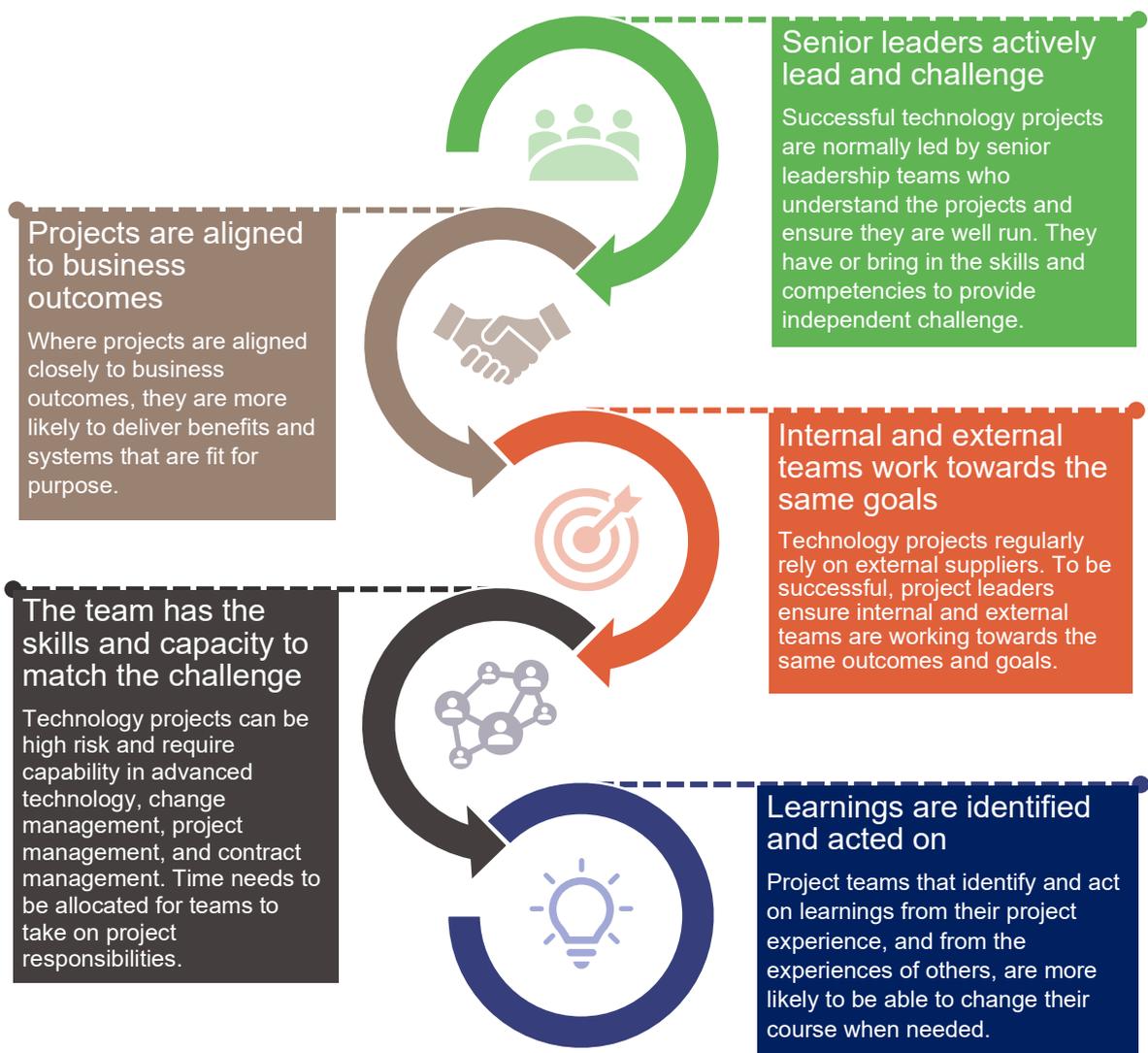
The COVID-19 pandemic has reinforced how important technology systems are in giving the public access to government services online. These systems depend on digital technology that is secure, reliable, and fit for purpose.

However, technology does not stay the same. Upgrades and changes are needed, and they are invariably complex and difficult. Unfortunately, many technology projects currently do not hit their deadlines, stay within budget, or achieve their objectives.

For this report, we have identified, from our audits and other research, five factors that, if managed and modified to suit, can improve the success of projects. They are summarised in Figure 1.

No one factor is more important than another; it is the combination and integration of them all that can make a difference.

Figure 1
Factors that contribute to successful technology projects



Source: Queensland Audit Office.

Actions

Insights from this report apply to all technology projects. All entities within the public sector can use the factors we have identified to improve the maturity of their processes to deliver technology projects. We have identified the following actions for the sector to consider.

Public sector boards and executives

1. Review their current portfolio of technology projects to re-confirm priorities ensuring that:
 - the projects they have underway at any one time reflect the entity's highest priorities and align with changes in its economic and business environments
 - they only take on the number, size, and nature of projects they have the capability to deliver
 - processes are in place to re-validate business cases to ensure that projects continue to be viable and the proposed benefits are still relevant
 - they actively challenge the progress and performance of projects—reports on benefits achieved are realistic and based on sound evidence.

 2. Ensure that for future projects involving external suppliers:
 - the contracts provide incentives to deliver the right outcomes for the business and share the risks and rewards across all parties
 - the contracts clearly describe the solution and the performance measures to achieve the outcomes
 - there are strong relationships at all levels of internal and external teams to facilitate the delivery of projects.

 3. Ensure that current and future technology projects are set up with the right mix of skills and resources.

 4. Reflect on why projects have failed in the past and take timely actions to avoid making those mistakes again. Prior learnings must form part of the key considerations in managing project risks.
-



1. How successful are technology projects?

To deliver the public services and infrastructure Queenslanders rely on, the government needs to invest in technology. The COVID-19 pandemic has highlighted the critical role of technology in keeping governments connected to business, society, and their workforce. For example, secure and reliable technologies have been needed for:

- students accessing remote learning from home
- health promotion through advice and alerts about COVID-19
- promotion, assessment, and allocation of COVID-19 grants to assist affected businesses
- payroll processing for teachers, nurses, police, and other essential workers.

Most new technology services and products are complex and require entities to identify business outcomes, manage contracts, and monitor expenditure, timeframes, and integration.

Unfortunately, it is difficult to deliver technology projects successfully. This is not unique to the Queensland public sector. National and international reports highlight the problems faced by other governments in delivering new or upgrading existing services. The public sector can improve by examining the reasons behind the successes and failures of technology projects.

In February this year, in *Queensland Government state finances: 2018–19 results of financial audits* (Report 11: 2019–20), we reported that the financial performance of the Queensland Government has reduced over the last two financial years, with expenses increasing at a greater rate than revenue. In the current economic environment, it is more important than ever to ensure that investments in transforming critical government services deliver value for money.

The Queensland Government has put a six-month hold on all non-essential new technology projects. This can create a risk that public sector entities delay essential projects while they request exemptions. However, it offers an opportunity for them to reconfirm priorities, and ensure that they set up their projects on sound foundations. They can do this by challenging and validating the need for the project and whether they have the right approach and mix of skills and capabilities to provide oversight and deliver the business outcomes.

How much does the sector spend on technology projects?

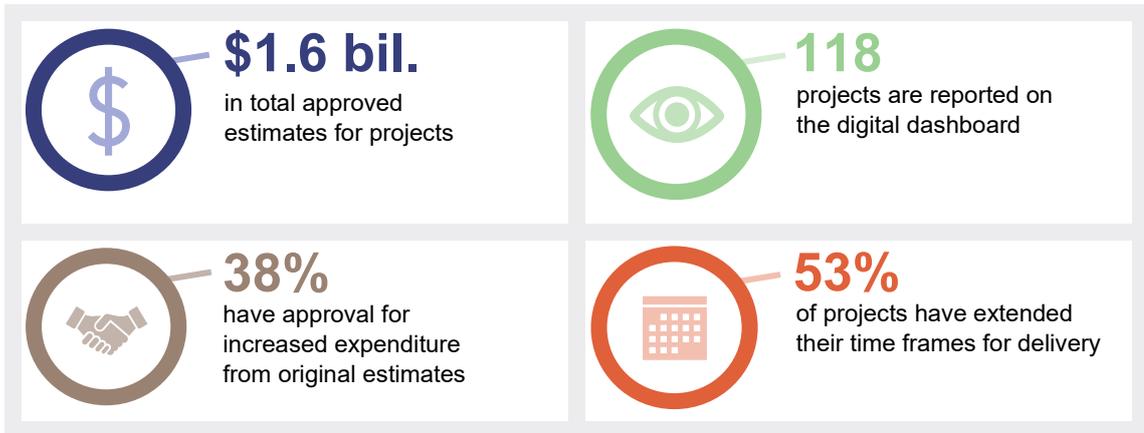
As at 30 June 2020, departments reported a total budget of \$1.6 billion in current technology projects on the Queensland Digital Projects Dashboard (the dashboard—maintained by the Queensland Government Chief Customer and Digital Group). Departments decide (based on dashboard publishing criteria) which projects they will report.

The dashboard does not include technology projects of public sector entities other than departments—statutory bodies, government owned corporations, and local governments. We conservatively estimate that over \$0.5 billion in approved budgeted expenditure for technology projects for these public sector entities is not reported on the dashboard.

We may examine these in future insight reports or audits, along with other projects on the dashboard. Figure 1A shows a snapshot from the dashboard.



Figure 1A
Snapshot of data from the dashboard, as at 30 June 2020



Source: Queensland Audit Office from the Queensland Digital Projects Dashboard.

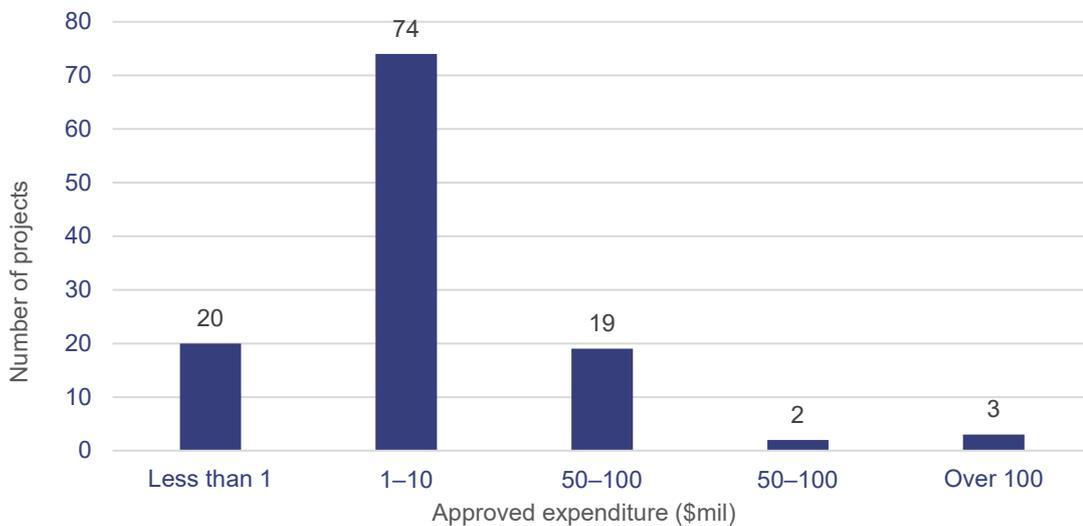
Most Queensland Government technology projects reported on the dashboard cost less than \$10 million, with an average estimated cost of \$2.8 million. The three largest projects have budgets greater than \$100 million. They are:

- Human Resources Information Solutions program—\$101.3 million (the Department of Housing and Public Works)
- Integrated Electronic Medical Records program—\$323 million (the Department of Health)
- Smart Ticketing Project—\$371 million (the Department of Transport and Main Roads).

Given the large investment, senior leadership teams have an important role in actively leading technology projects and ensuring they achieve their outcomes.

This is the case for all technology projects, regardless of cost. Those worth less than \$10 million individually still add up to a total of \$265 million, which is 16 per cent of the investment portfolio reported on the dashboard.

Figure 1B
Projects on the dashboard by approved expenditure ranges at 30 June 2020



Source: Queensland Audit Office from the Queensland Digital Projects Dashboard.



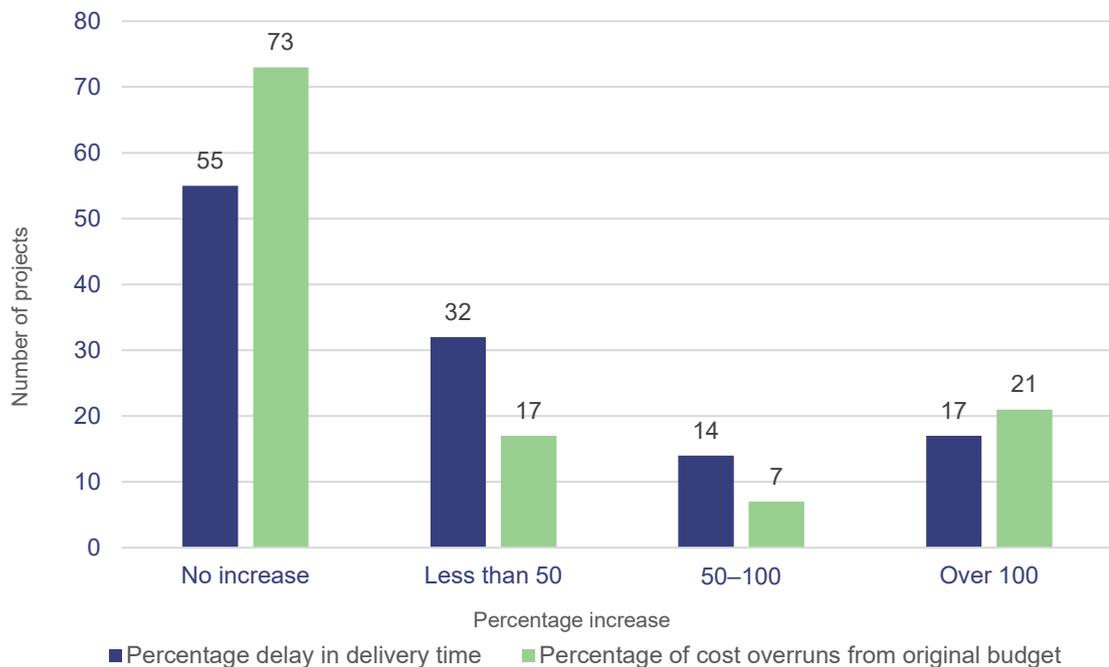
How are projects performing against time and budget?

Departments are reporting on 118 technology projects. Of these, 55 (47 per cent) are currently tracking on time and 73 (62 per cent) on budget. Departments expect around:

- 26 per cent of projects to take at least 50 per cent longer to complete than expected
- 23 per cent of projects will cost 50 per cent more than expected.

Increases in time and cost could arise from a multitude of reasons, or it could be due to incorrect estimates at the start. Our analyses from the dashboard are in Figure 1C below.

Figure 1C
Technology projects on the dashboard by time delays and budget overruns at 30 June 2020



Note: In calculating delays, we used the 'approved end date' from when departments first published the project as the reference point. To calculate the budget overrun, we used the cost that departments have reported as their 'commencement allocation' as the reference point. Some projects had budgets less than original costs; they are included in the 'no increase' category.

Source: Queensland Audit Office from the Queensland Digital Projects Dashboard.

Some projects take longer to complete than originally planned but still meet their budget. The dashboard does not show how often this occurs or why it happens. Figure 1D is a case study of the Human Resources Information Solutions program, which transferred to the Department of Housing and Public Works in December 2017 as part of the machinery of government changes. This case study is an example of a multi-year program that took twice as long to complete than planned but had no change in budget. It delivered different products than planned and did not achieve all its objectives.



Figure 1D Department of Housing and Public Works

Human Resources Information Solutions program

The Human Resources Information Solutions program was established to replace the outdated payroll system used by Queensland Corrective Services, Queensland Fire and Emergency Services and the Queensland Ambulance Service.

At the start, it included several projects to: stabilise the existing system; prepare data and processes for new systems; and develop a business case for the program. The budget for this initial part was \$1.5 million.

In September 2012, a budget of \$100 million was approved over four years (2012–2016) to replace the payroll system. The proposal for the new solution was to have an external service provider processing transactions and providing the systems for payroll and human capital management (staff recruitment, performance, and development).

In March 2015, after a change in government policy, the program changed so that all of the entities would:

- migrate from the old payroll system to another payroll system at Queensland Shared Services and continue using Queensland Shared Services for processing services for human resources and payroll
- use a human capital management system from an external service provider, with each entity processing its own transactions.

This was a significant change in the direction, approach, and products, with the timeline changed to December 2020 (four years after the original completion date). By June 2020, the program had delivered its payroll component but not the human capital management solution successfully. Despite the increase in the program's time lines, there was no change to the overall budget.

Source: Queensland Audit Office from Department of Housing and Public Works documentation.

What is the success rate of technology projects?

Our research shows there is a high rate of failure in delivering technology projects across the world. In 2018, the McKinsey Center for Government did a survey of 3,000 public officials across 18 countries and found that 80 per cent of public sector transformations fail to meet their objectives.

The Australian Institute of Project Management reported similar results in a joint global survey with KPMG and the International Project Management Association. With 500 respondents from 57 countries, this survey reported that only 19 percent of the organisations delivered successful projects most of the time.



Clearly, it is not easy to successfully deliver technology projects as shown in examples below:

- In 2019, the Australian National Audit Office issued a report on the Australian Criminal Intelligence Commission’s administration of its biometric identification services project. The commission cancelled this project after two years and renewed the contract with its existing supplier. It had spent \$34 million.
- In 2017, the Auditor-General of Canada found that the government’s new payroll system was not processing pays correctly. The project had a budget of CAN\$310 million and took seven years to implement. However, 16 months after implementation unresolved pay errors totalled half a billion Canadian dollars. The Canadian government estimated it would take three years and cost an additional CAN\$540 million to resolve the payment errors.
- In 2017, the National Audit Office in the United Kingdom reported on the Ministry of Justice’s new generation electronic monitoring program. Five years after initiating the project, the ministry renewed the contract with its existing supplier. It had spent £60 million.

Recent examples of cancelled projects in Queensland

The Queensland Government has also seen costly technology project failures, including the following:

- In 2018, the Department of Employment, Small Business and Training cancelled its Training Management System project after spending an estimated \$34 million.
- In 2019, Queensland Treasury cancelled its State Penalties Enforcement Registry (SPER) technology project after spending \$52.7 million.
- In 2020, the Department of Health cancelled its Laboratory Information System project after spending \$51 million. (Further details on this project are in Appendix B.)

These projects did not deliver the systems needed and have collectively spent more than \$138 million. Cancellation can be appropriate, but it needs to be at the right time before significant losses accumulate, and senior leaders should feel empowered to consider this option when it is in the best interests of the state.

If agencies repeat past practices, we can expect a significant proportion of Queensland’s technology projects to cost more and be delivered late or not at all.



2. How can we improve success rates of technology projects?

Having recognised the challenges in delivering technology projects successfully, we:

- analysed our prior audit reports and several national and international reports
- consulted with technology leaders, including those who have led technology projects in the public and private sectors
- reviewed five case study projects that are currently reported on the Queensland Digital Projects Dashboard (the dashboard). The key facts on the five case study projects, including time frames and project costs, are in Appendix B.

Based on this work, we have identified five factors, which, if managed and monitored throughout the life cycle of projects, can improve the chances of success. They are:

- senior leaders actively lead and challenge
- projects are aligned to business outcomes
- internal and external teams work towards the same goals
- the team has the skills and capacity to match the challenge
- learnings are identified and acted on.

Individually, each of the factors is valuable, but for projects to be successful, all the factors must be present, working together and integrated into the existing project management methodologies and controls. Each project is different, and senior leaders can determine how best and with what rigour to apply them to projects.

In this chapter, we discuss the factors and give examples of where they have made a difference to the success or failure of projects.

Senior leaders actively lead and challenge



Insight

Successful technology projects are normally led by senior leadership teams who understand the projects and ensure they are well run. They have or bring in the skills and competencies to provide independent challenge.

Technology projects create significant organisational change and carry a high risk of failure. To deliver them effectively, senior leadership teams need to take ownership, lead the change program and ensure it is set up for success. As part of this, leaders may need to supplement their own skills by bringing in experts to provide independent challenge.

Key areas for senior leaders to actively challenge include:

- the organisation's ability to deliver the number of change programs that are being delivered at the same time
- the impact of change on people, process, and technology, and how this sits with the organisation's appetite for change
- project planning, business cases, progress reports, and performance—in terms of whether they are realistic and based on sound evidence.



As part of our research, we identified a detailed report on a technology project to replace an old billing system: Sydney Water Customer Experience Program—Lessons to Emulate (CxP). The Digital Investment and Assurance unit within the New South Wales Department of Customer Service published this case study on its website, to share learnings. The New South Wales Digital Investment and Assurance unit, which provides similar services as the Queensland Government Chief Customer and Digital Group, partnered with Sydney Water to document the case study.

In Figure 2A we have included a brief description of the program and some of its key success factors from the case study report. We have not audited this program. Information in Figure 2A is solely based on the case study report.

Figure 2A Case study 1: Sydney Water

Customer experience program

Sydney Water identified that its 30-year-old billing system was at major risk of failure. In 2016, it established a customer experience program that included replacing the billing system. Some of the key success factors in the report included:

- demonstrating active and effective leadership at all levels, including the board
- the board bringing in its own subject matter expert for the duration of the project, who was independent of the project, to develop a good understanding of the program, provide independent challenge, and to build transparency in project reporting
- making the project a standing agenda item at board meetings
- pausing other organisational programs and changes to make way for program delivery
- engaging experienced suppliers, and building effective partnerships with business leaders (business and technical resources all came together, there was no ‘business versus technology’ mindset or environment)
- implementing a fast-paced delivery model with gap analysis of the new software at the start and involving business units in the project team so they understood how existing processes would change under the new system.

Source: ICT Digital Investment & Assurance, Department of Customer Service, New South Wales—Sydney Water customer experience program—Lessons to emulate.

Projects are aligned to business outcomes



Insight

Where projects are aligned closely to business outcomes, they are more likely to deliver benefits and systems that are fit for purpose.

Many technology projects in government are started because there is a need to avoid the cost of a failure in a legacy system (an old system that is no longer supported by its developer). Public sector entities often replace their legacy systems with new solutions that have the potential to deliver broader business outcomes than the existing system. They may improve efficiency and effectiveness in delivering services or they may enable richer insights into performance against key government priorities.

Projects will be successful and achieve these benefits if employees embrace the new solution and use it effectively. To this end, project leaders need to integrate business operations with new and emerging technologies throughout the life of the project.

They could do this by:

- having subject matter experts from the business as part of the project from the start
- involving business teams in evaluating and using new solutions as they adapt the business processes to the new ways of working
- monitoring the transition through the changes and adjusting the pace at which users adopt and use the system.

Figure 2B explains how the Department of Transport and Main Roads worked towards achieving alignment between business teams, suppliers, and a project team. This case study is about only one aspect of the project. The department documented and addressed several learnings during the project. The project is still in progress and the department can make a full assessment of project performance when it is complete.

Figure 2B Case study 2: Department of Transport and Main Roads

Vessel traffic services project

The Department of Transport and Main Roads involved its relevant business units in preparing a request for tender for replacing its vessel traffic systems (for services related to tracking and communicating with ships). After selecting the preferred supplier, and before signing the contract, the project team worked with the supplier and the business units to assess the gap between existing processes and the proposed solution. This process highlighted that:

- although the team intended to keep an open mind, it had included some of the existing ways of working in the requirements documents
- the five business units that would be using the new solution had different ways of working.

The project team used this phase to standardise the business processes as much as possible and to understand how the system would work in their business environment. The department reports that, as a result, all parties were clearer about how the system and business processes needed to adapt.

Source: Queensland Audit Office from Department of Transport and Main Roads project documentation.

Where system changes are large components of the project, it is useful to understand and agree on a minimum acceptable product (one that has the minimum features for the core business) from the start of the project. This enables the business to take an early look at the system and provide feedback as needed.

Another key aspect of effective alignment is to build agility into the project, so it is responsive to the business needs and is continuously integrating and delivering solutions. This is especially important at the program level, as programs often run over multiple years and have several projects that contribute to program outcomes. To continually align with changing business needs and outcomes over time, successful program leaders regularly review their priorities, while still delivering business benefits.

Figure 2C is a case study on how the Department of Environment and Science developed a program with built-in agility and flexibility so it could pivot in line with changes in business, economic, and technology environments. This case study is about only one aspect of the program. The program is still in progress and the department assesses project performance as it progresses.

Figure 2C

Case study 3: Department of Environment and Science

Accelerating Science Delivery Innovation program

This program involves transforming the delivery of scientific information in Queensland. The program includes a series of projects to enable new and more accessible insights and data to support quality decision-making across government. It is also used in the scientific community.

The department designed this program to be flexible, and it reviews its projects annually for funding. It designed the individual projects to deliver value as they progress, so when the funding finishes for each project, it can be re-prioritised, along with the other projects in the program.

This enables the department to regularly review the relevance of the projects to its strategic business outcomes. It reports that it is progressively enhancing its technology infrastructure and implementing digital collaboration tools for the scientific community.

Source: Queensland Audit Office from Department of Environment and Science program documentation.

Internal and external teams work towards the same goals



Insight

Technology projects regularly rely on external software providers. To be successful, project leaders ensure internal and external teams are working towards the same outcomes and goals.

Technology projects regularly rely on external software providers, who can sometimes be based internationally. This reliance on people and capabilities outside of the organisation (and sometimes out of the country) can be appropriate, but can add complexities, such as differing legislation, language, culture, and ways of working.

To engage effectively with external parties, successful project leaders ensure the contracts:

- include incentives to deliver the right outcomes
- include clear a description of the solution and confirm the time and effort needed for it to be ready for use.

For the projects to be successful, project leaders foster a one-team culture, with everyone having the same goal of delivering the project to the required standard. This means working together to solve problems and implement an effective strategy.

Figure 2D is a case study of the Election Gateway Project. It highlights the challenges the Electoral Commission of Queensland had in working with an external supplier to deliver the system. This project is currently in its delivery phase. A parliamentary inquiry reviewed the online publication of preliminary and formal counts of the votes cast in the local government elections and the state by-elections held on 28 March 2020. Our report does not include a detailed review of the project itself or of any technical issues. The case study describes one of the difficulties the commission faced when developing and implementing the system.

Figure 2D

Case study 4: Electoral Commission of Queensland

Election Gateway Project

In 2015, the Electoral Commission of Queensland started a project to replace its legacy system for most of its electoral planning, operations, and reporting processes. It intended to purchase a commercial off-the-shelf product and it knew from the start that the system would need customisation.

The international supplier established the development team offshore. As the supplier did not have experience with the Australian elections systems, it took time for them to understand the requirements. At the start, the supplier did not have the measures and level of transparency for project performance that the commission expected. Five months after signing the contract, the commission experienced delays in detailed design and technical documentation.

To progress the project, the commission worked with the supplier to assess the effort needed to achieve the milestones. It brought in additional technical expertise in the internal team to increase overall capacity. Then the commission identified the priority functions needed for the upcoming local government elections and the state by-elections in March 2020. It adopted a phased approach to deliver the system.

The commission documented several learnings during the project. One of the learnings was to ensure that all components, including backup components, of the end-to-end solution are fully tested prior to going live.

Source: Queensland Audit Office from Electoral Commission of Queensland documents.

To foster strong relationships with external teams, engaged project leaders ensure the preferred supplier and the project team have a common understanding of how the software aligns with the business outcomes, prior to signing the contract. As part of this, it is useful to determine the minimum acceptable product.

This can help in:

- balancing risks and rewards across all parties and creating incentives for performance
- aligning milestone payments with agreed deliverables as they relate to progress in delivering the solution
- clearly articulating roles, responsibilities, time frames, and deliverables for all parties throughout the contract.

Figure 2E is a case study showing what happened when an organisation's and a supplier's assumptions about implementation time frames were not aligned. This lack of alignment between internal and external teams has caused a pause in the project, while senior leaders try to negotiate a way forward with the suppliers.



Figure 2E Case study 5: QFleet

Fleet management system replacement

In 2017, QFleet (part of the Department of Housing and Public Works) began a project to replace its fleet management system. As part of the procurement process, it held workshops with the suppliers and the business to gain a thorough understanding of the gap between the business needs and what the software could provide.

After signing the contract, QFleet worked with the supplier to define the project for an implementation plan and delivery dates. At this stage, it noted that the supplier's delivery plan was not the same as its own.

Negotiations with the supplier about delivery plans for the project failed. For this reason, the project was paused.

The Queensland Government Chief Customer and Digital Officer is assisting in negotiating with the supplier for a way forward to deliver a minimum acceptable product.

Source: Queensland Audit Office from Department of Housing and Public Works project documentation.

The team has the skills and capacity to match the challenge



Insight

Technology projects can be high risk and require capability in advanced technology, change management, project management, and contract management. Time needs to be allocated for teams to take on project responsibilities.

Successful leaders recognise the importance of taking an integrated approach to selecting the project team. They know they require a mix of skills including advanced technical capabilities, change management, project management, business knowledge and contract management.

They do this by involving subject matter experts who have proven capability in delivering similar projects. When engaging external suppliers, successful project leaders ensure there is a good cultural fit and that the supplier provides the talent and skills they promised.

To match the capability needed with the challenge, successful project leaders ensure:

- the right people are available when they need them and have sufficient time to manage their responsibilities
- the team has the right mix of qualifications and experience
- the team can balance its focus on both the project and the business requirements, and has the flexibility to adapt with change
- team members, including suppliers, are incentivised to keep to budgets and time frames.

Figure 2F is a case study of one aspect of the Human Resources Information Solutions program, showing how the Department of Housing and Public Works matched capability to the challenge for the payroll component of the program. This case study is about transitioning the Queensland Ambulance Service from an old payroll system to a supported payroll system.

Figure 2F Case study 6: Department of Housing and Public Works

Human Resources Information Solutions program: payroll system

The Human Resources Information Solutions program was to transition the payroll systems for four entities to a supported system and deliver a human capital management (staff recruitment, performance, and development) solution for three of the same entities. This case study covers the transition of payroll for the Queensland Ambulance Service to a supported system. This payroll involves a rostered solution with multiple awards, allowances, and special conditions.

The parties involved in delivering the payroll solution for Queensland Ambulance Service were:

- the Department of Housing and Public Works as the owner of the program
- the Queensland Ambulance Service as a recipient of the service
- the Queensland Shared Services (a business unit of the Department of Housing and Public Works) as the owner and manager of both the old and new payroll systems and most of the business processes
- the Public Safety Business Agency (PSBA) as the technology service provider for Queensland Ambulance Service.

While the payroll program board was accountable for delivering this project, the Queensland Ambulance Service also established an internal reference group. Project documents show that this group provided input and support to progress the project.

Project documents also show that the team included people with:

- the relevant technical skills
- change management and project management skills
- subject matter expertise from the business.

In the project closure report, the project manager commented that there was continued commitment from all the team members to deliver the project successfully.

Source: Queensland Audit Office from Department of Housing and Public Works program documentation.

Learnings are identified and acted on



Insight

Project teams that identify and act on learnings from their project experience, and from the experiences of others, are more likely to be able to change their course when needed.

Lessons learnt and success factors for technology projects are widely published for international, national, and local projects. However, our research shows that senior leaders find it difficult to ensure lessons are learnt and avoid repeating mistakes of the past.

Most projects in scope for this report have registers for lessons learnt, including lessons discussed at workshops, findings from various types of reviews, and lessons from project team members. Some registers include action items that project teams mark off when completed. However, these processes do not seem to result in learnings about the decisive actions business and project leaders need to take to avoid mistakes that have been made before.



Leadership teams need to step back and ensure the project teams use the learnings on why projects have failed, to manage current project risks. Leadership teams also need processes to confirm that project teams:

- scan the environment for similar projects, document their learnings, address (at the start of a project) any risks experienced in other projects that are likely to occur in their project
- run workshops on internal lessons learnt and take actions to correct the course as necessary while the project is in progress
- share key learnings with all stakeholders and other project teams within government
- document how they addressed key lessons learned in project closure reports and make it available for other projects.

Figure 2G highlights the importance of identifying and acting on project learnings. It shows that the Department of Health had processes in place to discuss review findings and lessons from other projects. However, it missed opportunities to:

- challenge the business case throughout the life of the project on the rationale for replacing the existing system
- take sufficient and timely actions to affect the level of project change that was necessary when reports showed that the project was deteriorating against its key performance indicators (since January 2018).

Figure 2G Case study 7: Department of Health

Laboratory Information System project

This project involved replacing the Department of Health's laboratory information system with a commercial off-the-shelf system for its 36 laboratories across the state. The department endorsed the business case in November 2017.

The department undertook multiple reviews throughout the project. It documented learnings about governance, communication, resource management, and the supplier's ability to deliver the product.

In March 2019, the department took action to restructure the project and increase its interactions with the supplier at senior levels.

In September 2019, when the department undertook an options analysis for a way forward with the supplier of the new system, it found many learnings, including:

- the 2017 business case significantly overstated the urgent need to replace the existing system and overestimated the projected financial benefits
- monthly project reports, since January 2018 (when the contract was signed), were showing a deterioration of project performance and that this correlated with the increasing risk profile of the project
- the contract and project payment plan were not fit for purpose after the department found out in March 2018 that the supplier needed to do some development work on the software
- a review commissioned in June 2018 highlighted concerns with governance, communications, resource management, and the supplier's ability to deliver the product.

The department still has the risk of an ageing laboratory information system that it may need to address in the future.

Source: Queensland Audit Office from Department of Health project documentation.



3. Appendices

A. Entity responses	18
Comments received from Director-General, Department of Housing and Public Works	19
Comments received from Chief Customer and Digital Officer, Department of Housing and Public Works	20
Comments received from Commissioner, Queensland Corrective Services	25
Comments received from Commissioner, Queensland Ambulance Service	26
Comments received from Commissioner, Queensland Fire and Emergency Services	27
Comments received from Director-General, Department of Health	30
Comments received from Deputy Director-General, Department of Environment and Science	37
Comments received from Director-General, Department of Transport and Main Roads	38
Comments received from Electoral Commissioner, Electoral Commission Queensland	40
B. Project details	41
Introduction	41
Human Resources Information Solutions program (budget: \$101.3 million)	41
Laboratory Information System project (budget: \$64 million)	44
Accelerating Science Delivery Innovation program (budget: \$42.4 million)	46
Vessel Traffic Services project (budget: \$36.2 million)	48
Fleet Management System Replacement project (budget: \$13.9 million)	50
C. How we prepared the report	52
About the Auditor-General's insights	52



A. Entity responses

We gave a copy of this report with a request for comments to the Department of Housing and Public Works; Chief Customer and Digital Officer; Queensland Corrective Services; Queensland Ambulance Service; Queensland Fire and Emergency Services; Department of Health; Department of Environment and Science; Department of Transport and Main Roads and the Electoral Commission Queensland.

The head of each entity is responsible for the accuracy, fairness and balance of its comments.

This appendix contains their detailed responses.



Comments received from Director-General, Department of Housing and Public Works



Department of
Housing and Public Works

Our Ref: MN02115-2020
Your Ref: 12200

22 SEP 2020

Ms Karen Johnson
Acting Auditor-General
Queensland Audit Office
Level 14, 53 Albert Street
Brisbane QLD 4002

Dear Ms Johnson

Thank you for your letter of 2 September 2020 regarding your intention to table a report to parliament on "insights on delivering successful technology projects" and the opportunity to provide comment.

I note that this report has been sent separately to the Chief Customer and Digital Officer (CCDO). The CCDO's response to the report is included as **Attachments 1 and 1a** to this letter.

The Department of Housing and Public Works acknowledges the findings and observations and supports the actions detailed in the report. The department will take action to review its current portfolio of technology projects to reconfirm priorities and consider improvements around project governance and management including external supplier arrangements, resourcing and application of lessons learned from previous projects.

If you require further information regarding the departmental perspective, Cate Butchers, Director Information, Security and Assurance, Digital Business Group can be contacted on or email

If you require further information, please contact Robyn Turbit on or email

Yours sincerely

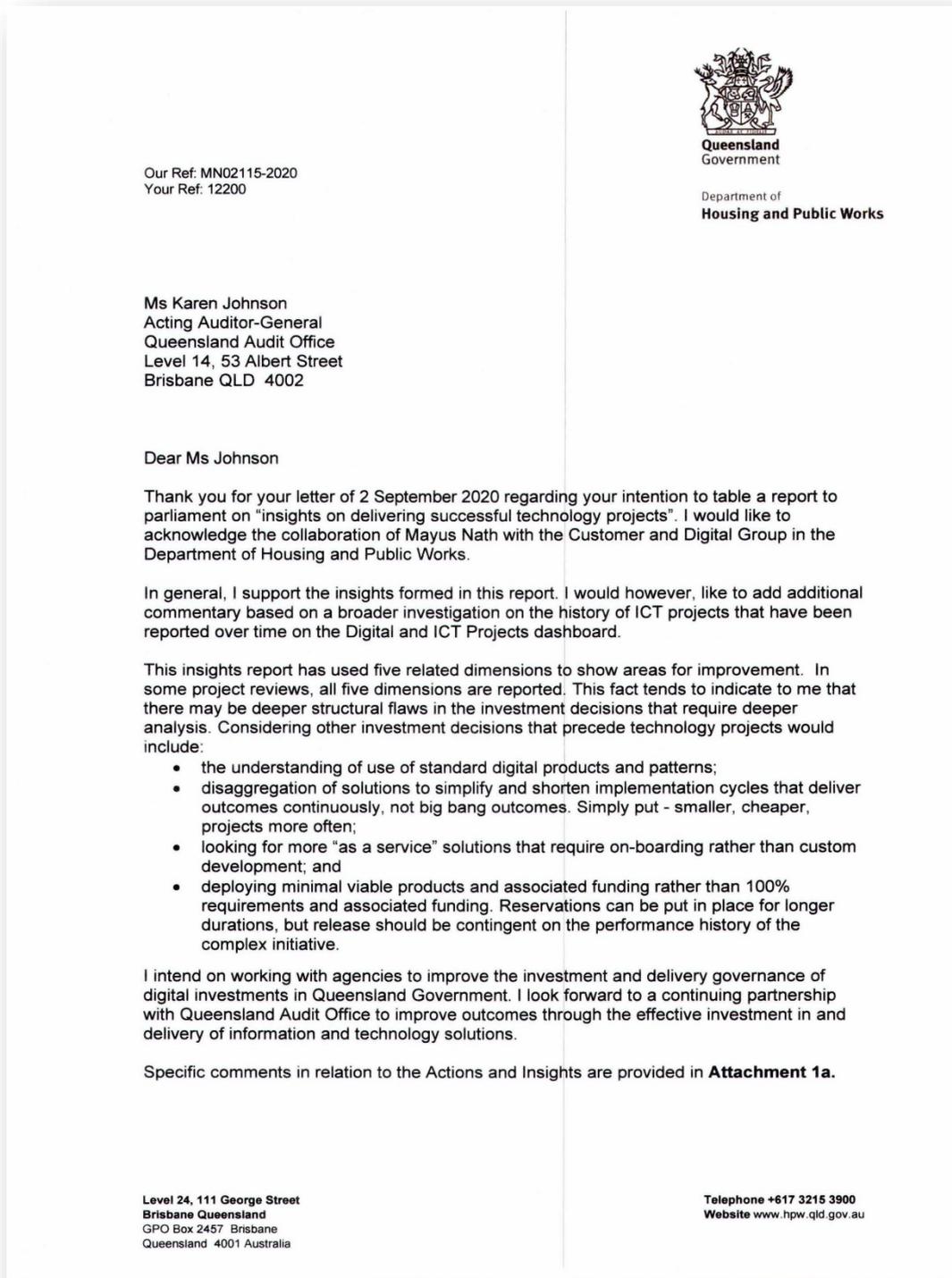
A handwritten signature in black ink that reads 'Liza Carroll'.

Liza Carroll
Director-General

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Website www.hpw.qld.gov.au

Comments received from Chief Customer and Digital Officer, Department of Housing and Public Works



If you require further information on this matter, please contact me on [redacted] or
email [redacted]

Yours sincerely



Chris Fechner
Chief Customer and Digital Officer

21 September 2020



Responses to recommendations

Chief Customer and Digital Officer response

Delivering successful technology projects – QAO Insights report September 2020

No.	Actions	Insights	Agree/ Disagree	Comments
	Public sector boards and executives	Senior leaders actively lead and challenge: Successful technology projects are normally led by senior leadership teams who understand the projects and ensure they are well run. They have or bring in the skills and competencies to provide independent challenge.	Agreed	Capability of Board members and the need for them to have a good understanding of digital before leading digital projects is paramount. They also need to consider the nature of delivery eg not have long running projects with outcomes achieved only at the end of the project.
1.	Review their current portfolio of technology projects to re-confirm priorities ensuring that:			
1.1	the projects they have underway at any one time reflect the entity's highest priorities and align with changes in its economic and business environments		Agreed	High priority projects include legacy systems replacement, demonstrating failures of an organisation to maintain currency of their business solutions. Agencies request funding from Treasury to address the urgency and are frequently asked to "bundle" smaller investments into a bigger initiative to get funding however this blurs the value case of the smaller investments. This is strongly evidenced by the lack of alignment to business benefits from the original benefits case.
1.2	they only take on the number, size, and nature of projects they have the capability to deliver	Where projects are aligned closely to business outcomes, they are more likely to deliver benefits and systems that are fit for purpose.	Agreed	
1.3	processes are in place to re-validate business cases to ensure that projects continue to be viable and the proposed benefits are still relevant		Agreed	Re-validate process after scope determined should be included in a terms-of-reference template for all boards. Historically the focus has been on getting funding via the business case and then allowing lots of scope change without re-prosecution. This is especially evident in the mega-budget projects. This could have been better addressed by a Government Enterprise Architecture position.

MN02115-2020



1.4	they actively challenge the progress and performance of projects—reports on benefits achieved are realistic and based on sound evidence.		Agreed	Continuous delivery assurance (a current step) is currently working through how to do this in an effective and scalable way.
2. Ensure that for future projects involving external suppliers:				
2.1	the contracts provide incentives to deliver the right outcomes for the business and share the risks and rewards across all parties	Technology projects regularly rely on external software providers. To be successful, project leaders ensure internal and external teams are working towards the same outcomes and goals.	Agree	To include a clear description of the solution attempts to fix outcomes at the commencement. This doesn't support Human Centre Design, agile, or CI/CD models where each phase depends on the deliverables of the previous one. A more contemporary approach to this is to implement product teams (rather than project teams) who are: - inclusive of a minimal set of ongoing resources who will always be with the product; - always focused on how the system will operate and what new features will be important; - less likely to have major change impacts from build to operate as releases are smaller and the feedback loops shorter; - always connected to the strategic direction resulting in a more "evergreen" solution.
2.2	the contracts clearly describe the solution and the performance measures to achieve the outcomes		Partially agree – outcomes for first phase should be described.	Project teams are time bound; not focused on changing needs; likely to suffer issues moving from build to operate in technology and culture; treated independently of the existing solution; have one time input of strategic direction and are subject to peak and trough investment
2.3	there are strong relationships at all levels of internal and external teams to facilitate the delivery of projects.		Agree	

MN02115-2020



3.	Ensure that current and future technology projects are set up with the right mix of skills and resources.	Technology projects can be high risk and require capability in advanced technology, change management, project management, and contract management. Time needs to be allocated for teams to take on project responsibilities.	Agree	Leadership in this report has focused primarily on executive management however leadership is required at all levels of the project.
4.	Reflect on why projects have failed in the past and take timely actions to avoid making those mistakes again. Prior learnings must form part of the key considerations in managing project risks.	Project teams that identify and act on learnings from their project experience, and from the experiences of others, are more likely to be able to change their course when needed.	Partially agree	These are mostly lag indicators and are subject to being able to be "discovered" from learnings registers and do provide value. There is a strong body of evidence in contemporary approaches that sentiment supported by a few lead indicators of project health are better. A very contemporary practice in this model is the "retrospective" in agile. This takes the aforementioned insights on a short duration, regular basis to continuously look for improvements between iterations

MN02115-2020



Comments received from Commissioner, Queensland Corrective Services



Office of the
Commissioner

**Queensland
Corrective Services**

Ref: QCS-03736-2020
Your Ref: 12200

18 SEP 2020

Ms Karen Johnson
Acting Auditor-General
Queensland Audit Office
QAO.Mail@qao.qld.gov.au

Dear Ms Johnson

Thank you for your letter of 2 September 2020 providing a draft report with your insights on delivering successful technology projects.

I note the range of audits and research that has been undertaken over time, exploring the reasons for the success or otherwise of information technology (IT) projects. The consolidation of these findings into this one report is invaluable. I fully support the findings and my department will review its project management practices in light of the report.

An action proposed in the draft report is for project boards and executives to review their current portfolio of technology projects to re-confirm priorities. I am pleased to advise that Queensland Corrective Services (QCS) is currently in the process of reviewing and prioritising all in-flight and proposed IT projects, with the aim of either stopping, pausing or continuing where it is identified as essential and aligned to business outcomes.

QCS' contract and project management capability remains a priority and this has been a consideration in recent organisational re-alignments, which will support implementation of the remaining actions proposed in this report.

If you require further information regarding this matter, please contact Chief Superintendent Michael Nikolic, Chief Digital Officer, Digital Services and Information Technology, on
or

I trust that this information is helpful to you.

Yours sincerely


Peter Martin APM
Commissioner

OFFICIAL

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Comments received from Commissioner, Queensland Ambulance Service



Ref: 20/00475
Mincor: 04663-2020



Queensland
Government

Queensland
Ambulance Service

Department of
Health

23 September 2020

Ms Karen Johnson
Acting Auditor-General
Queensland Audit Office
PO Box 15396
CITY EAST QLD 4002

Dear Ms Johnson

Thank you for your correspondence dated 2 September 2020, in which you provided the Queensland Ambulance Service (QAS) with a copy of the Queensland Audit Office's (QAO's) proposed insights report on delivering successful technology projects.

I have considered the proposed report, and I understand that it is your intention to table the finalised report to Parliament in September 2020.

I note the findings of the proposed report, having specific regard for the participation of the QAS in the Human Resources Information Solutions Program led through the Department of Housing and Public Works. To this end, the QAS acknowledges the findings and observations of the proposed report as it relates to this Program.

Having further regard for these findings, I note that the QAS will take appropriate actions to review its current and proposed portfolio of technology projects with a view to ensuring that the lessons learned through the QAO report are effectively captured and applied, driving ongoing benefits to the organisation in its delivery of timely, quality and appropriate patient focussed ambulance services to the Queensland community.

Thank you for the opportunity to consider the proposed report. If you would like any further information, I have asked Mr Kent Grayson, Executive Director, Information Communications and Technology, QAS, to be available to assist you on telephone

Yours sincerely

Russell Bowles ASM
Commissioner

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Comments received from Commissioner, Queensland Fire and Emergency Services



File No: QFS/15769
Ref No: 03887-2020
Your Ref: 12200

23 SEP 2020

Ms Karen Johnson
Acting Auditor-General
Queensland Audit Office
QAO.Mail@qao.qld.gov.au



Queensland
Government

Office of the
Commissioner

Queensland Fire and
Emergency Services

Dear Ms Johnson

Thank you for your letter dated 2 September 2020, regarding the Auditor-General's insights report on delivering successful technology projects and for providing Queensland Fire and Emergency Services (QFES) the opportunity to provide comments.

QFES continues to develop maturity in relation to project governance and delivery. The department's approach is consistent to that outlined in 'Factors that contribute to successful technology projects' (Figure 1 on page 2 of the report), noting that much of QFES' actual technical work is facilitated by the Public Safety Business Agency (PSBA) on behalf of QFES. PSBA provides professional Information and Communication Technology, financial, procurement, asset management and human resource services to the public safety agencies including QFES.

QFES' comments to the Auditor-General's insights draft report on *Delivering successful technology projects* are provided (**Attachment 1**).

Should you require any further assistance, please contact Ms Meg Lowe, Director, Knowledge Hub via email

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Greg Leach'.

Greg Leach
Commissioner

Enc.

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Website www.qfes.qld.gov.au
ABN 93 035 163 778

Responses to recommendations

Attachment 1

Queensland Fire and Emergency Services (QFES) response to the Auditor-General's insights draft report on *Delivering successful technology projects*

1. Review of current portfolio of technology projects to re-confirm priorities

- QFES has actively engaged in developing a strong Information and Communication Technology (ICT) Portfolio Management and Governance capability. This includes a standardised process for identifying, exploring, approving, prioritising and delivering ICT projects in partnership with Frontline and Digital Services (F&DS) within Public Safety Business Agency (PSBA) and other parties under contract.
- QFES develops an annual program of work that consists of prioritised projects and initiatives. QFES develops this program based on identified business needs, technology life-cycling, available capacity and an approved funding envelope.
- QFES uses the Queensland Government Gateway process to assist with decision-making associated with QFES-led ICT projects. In the case of lower level initiatives, QFES relies on detailed reporting to assess the progress of projects against objectives and the probability of delivering benefits and will revisit the business case where it appears a project is 'at risk'.
- The ICT Portfolio Management and Governance team actively oversee the progress of all QFES-led ICT Projects and Initiatives as well as those led and managed by F&DS on behalf of QFES and provide advice on project health, including recommendations to the respective Project Boards. All projects, programs and initiatives have the oversight of a Program or Project Board or a Program Control Group.
- Further to this, QFES is currently engaged in the Unite and Recover Data and Savings Program process, whereby all ICT initiatives are reported to, and assessed by the Office of Assurance and Investment within the Department of Housing and Public Works.

2. Future projects involving contracts and relationships with external suppliers

- QFES actively works with PSBA to undertake contract development and contract management activities.
- When developing new ICT contracts or renegotiating existing contracts, QFES leverages the knowledge of the PSBA Procurement Services Group. QFES also engages specialised consultants and contractors to assist with matters such as the development of market documentation, probity and contract development to ensure that ongoing value can be leveraged from contracts.
- Where delivery of a project occurs with an implementation partner or product vendor, QFES provides very clear direction in the form of business requirements or inductions to ensure that all parties are clear on deliverables. Stand-ups and more formal project team meetings are held to ensure that understanding is maintained, risks and issues are identified early, and everyone is working to the same plan.
- The success of the Aurion (QFES' Self Service Payroll system) implementation was due to strong relationships with internal and external teams, which QFES will seek to replicate on future projects.
- All ICT procurement for Queensland public safety agencies is undertaken in accordance with the Queensland Information Technology Contracting (QITC) Framework.
- The QITC Framework allows for individual contracts to be directly formed between a Supplier and a Customer for ICT procurements under a common contractual framework. It includes standardised terms and conditions for the purchase of ICT Products and Services and was co-designed by government and industry. The QITC Framework provides a choice of contract types to reflect the risk and value of ICT procurement activities.



3. Ensure that current and future technology projects are set up with the right mix of skills and resources.

- QFES works with F&DS to estimate resource requirements for ICT Projects. As technology changes quickly, a mix of public service resources and contract resources has been the standard model to ensure both knowledge development within the QFES business and the acquisition of skilled workers with contemporary ICT skill sets.
- Historically, this mix of resources has allowed for adaptive responses to changing technology.

4. Reflect on why projects have failed in the past

- Lessons management is a key component of the QFES operational environment and this also translates to the ICT project environment.
- Post Implementation Review is a standard component of ICT project practices within QFES.
- Lessons are also captured and applied during inflight project delivery, particularly where the same output is delivered over multiple sites or occasions.
- There are many lessons documents from the Human Resources Information System (HRIS) program, which QFES will review and consider in future projects.



Comments received from Director-General, Department of Health



Queensland Health

Enquiries to: Damian Green
Deputy Director-General, eHealth Queensland
Chief Information Officer, Queensland Health

Telephone:
Our ref: C-ECTF-20/12842
Your ref:

Ms Karen Johnson
Acting Auditor-General
Queensland Audit Office
PO Box 15396
CITY EAST QLD 4002

Email: gao@gao.qld.gov.au

Dear Ms Johnson

Thank you for your letter dated 2 September 2020, which enclosed the Auditor-General's proposed insights report on delivering successful technology projects.

I note the report's findings and thank you for the insights that it suggests. The report highlights that technology projects are a significant challenge for public and private organisations across the globe. Queensland Health is no different in this regard, and the consolidation of learnings from across the public sector within the proposed report provides a helpful reference moving forward.

As you know I announced the Laboratory Information System (LIS) project was being discontinued by Queensland Health in April 2020. I welcome the acknowledgement in the report that "cancellation can be appropriate" and that "senior leaders should feel empowered to consider this option when it is in the best interests of the state". The report states that this "needs to be at the right time before significant losses accumulate", but cancellation can be the optimal option at any point and requires active exploration at all times.

In the case of the LIS project analysis, it demonstrated that the most cost-effective option was to discontinue the project. This was due to several factors, the most notable of which was a re-evaluation of the need to replace the existing system. In 2012, the current system was forecast to reach end of life in June 2020, but the system was procured by a larger vendor in 2015, upgraded, and support extended to at least 2029. Meanwhile, it became evident that the replacement project required significant software development that was not originally in scope, and as a result, the risks and costs of continuing exceeded that of upgrading the existing system. At the same time, the COVID-19 pandemic necessitated the prioritisation of laboratory resourcing towards the output of more than 9,000 COVID-19 tests per day. As a result, it was determined that the optimal option for Queensland Health, considering all costs, benefits and risks was to discontinue the project. This decision was validated by independent experts.

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ABN 66 329 169 412

In the Auditor-General's report number 1 for 2018-19, *Monitoring and Managing ICT Projects*, it is noted that 67 per cent of companies fail to terminate unsuccessful projects. A subsequent recommendation in report 10 for 2018-19, *Effectiveness of the State Penalties Enforcement Registry ICT Reform*, was "Ensure project steering committee members understand that they are empowered to stop projects". The proposed insights report has now recommended that "Boards and executives review their current portfolio of technology projects to re-confirm priorities ensuring that the projects they have underway at any one time reflect the entity's highest priorities and align with changes in its economic and business environments". The LIS Project is an example of these recommendations in action. Characterising the LIS Project as a "costly technology failure" does not consider the fact that project drivers change over time, and that as a result, the best option can be to stop a project, rather than complete it. It is a matter of regret that this example of recommendations being followed was not highlighted in the report. However, I appreciate the report was designed to be brief and focussed on the five factors.

Overall, there are many lessons which have been learnt from the LIS Project. Queensland Health has captured, shared and is integrating these into practice. Many of these lessons relate to the five factors identified in the proposed report.

Queensland Health acknowledges that these five factors are a useful conceptual framework to consider in delivering technology projects. For example, it currently collects, aggregates and disseminates lessons learned from Information and Communications and Technology (ICT) projects, facilitating the continuous integration of learnings. Queensland Health is also in the process of strengthening the application of Gateway Assurance to require accountable ICT project officers to submit reports to project teams and relevant governance bodies. It is hoped the sharing of lessons and the willingness to harness a wider range of resources and expertise to support assurance activities will support more successful technology projects and the attainment of system-wide goals.

Attachment 1 provides a response to each of the actions that the proposed report lists for consideration. Each action is commented on from the perspective of the LIS project specifically, as well as from the perspective of Queensland Health more generally.

Should you require further information, Queensland Health's contact is Mr Damian Green, Deputy Director-General, eHealth Queensland on telephone .

Yours sincerely



Dr John Wakefield PSM
Director-General
22/09/2020

Responses to recommendations

Action for Consideration	Agree/Disagree	Comments (LIS Project)	Comments (Additional)
<p>1. Public sector boards and executives should review their current portfolio of technology projects to re-confirm priorities ensuring that:</p> <ul style="list-style-type: none"> • the projects they have underway at any one time reflect the entity's highest priorities and align with changes in its economic and business environments • they only take on the number, size and nature of projects they have the capability to deliver • processes are in place to re-validate business cases to ensure that projects continue to be viable and the proposed benefits are still relevant • they actively challenge the progress and performance of projects – reports on benefits achieved are realistic and based on sound evidence. 	<p>Agree</p>	<p>The LIS Project was formally reviewed at several junctures to confirm its prioritisation, including in October 2015 (preliminary business case) and November 2017 (detailed business case). In each instance it was determined to be a priority of Queensland Health and the Queensland Government. The project was informally reviewed by the Director- General in December 2018 and March 2019. In September 2019, the Senior Responsible Owner commissioned another formal review, which identified that continuation of the project was no longer in the best interest of Queensland Health given the changed environment. As part of each formal review, the business case was appraised to ensure the drivers of the project remained valid (the review of 2019 found that this was no longer the case). A project health check was done in mid 2019. Reviews are resource intensive. Treasury's project management requirements include formal reviews at gateways and project health checks. Given the self-assessed high-risk rating, the 2019 health check was undertaken by independent assurance experts as recommended by Treasury.</p>	<p>The four recommendations contained in the report are extremely important for the system and provide guidance to improve the delivery of complex ICT projects. In particular, the report highlights that a more proactive approach is required in both assurance and governance of ICT projects, which will be implemented in line with the other improvements to ICT governance.</p> <p>At the system level there are frameworks and processes in place to guide boards and executives. However, it is acknowledged that more needs to be done to strengthen the performance of projects particularly when they are large and complex.</p> <p>Significant ICT initiatives are assessed in accordance with the Queensland Health Investment Management Framework, ensuring a structured and rigorous approach to investment.</p> <p>All ICT initiatives are bound by the requirements outlined in the Governance of ICT initiatives Policy (QH-POL-470:2019) and the subordinate Standard – Requirements of ICT Initiatives (QH-IMP-470:2019). These:</p> <ul style="list-style-type: none"> • promote prudent and efficient decisions that maximise value for money and strategic alignment at all stages of an ICT initiative's lifecycle; • enable a portfolio approach to investment appraisal and assurance so that all significant projects are evaluated and monitored against strict criteria; • promote cogent, standardised and timely performance reports and interrogation; and • support effective risk and benefit management.



Action for Consideration	Agree/Disagree	Comments (LIS Project)	Comments (Additional)
			<p>Within Queensland Health, Gateway Assurance is applied in accordance with the Queensland Health ICT-enabled initiative assurance framework.</p> <p>A standard component of Gateway Reviews is independent verification of the business case – ensuring that it is valid despite any internal or external events or changes, and confirmation that the objectives are still aligned with the wider organisational business strategy.</p> <p>The assurance framework is being strengthened to state that the recommendations within the Gateway Assurance Review Report are to be submitted to the initiative team for development of an action plan and the relevant governance body and Chief Information Officer for increased oversight and monitoring.</p> <p>Queensland Health is currently exploring ways to improve the governance of its ICT portfolio, including a review of the peak ICT governance body, which will be informed from this report.</p> <p>It is envisioned that any new ICT portfolio governance will deliver prudent and efficient ICT investment, within centrally set parameters or guardrails. It will be underpinned by principles that encourage a collegiate approach to ICT delivery where system stakeholders share knowledge, expertise and resources to improve the success in delivering complex ICT projects.</p>



Action for Consideration	Agree/Disagree	Comments (LIS Project)	Comments (Additional)
<p>2. Public sector boards and executives ensure that for future projects involving external suppliers:</p> <ul style="list-style-type: none"> • the contracts provide incentives to deliver the right outcomes for the business and share the risks and rewards across all parties • the contracts clearly describe the solution and the performance measures to achieve the outcomes • there are strong relationships at all levels of internal and external teams to facilitate the delivery of projects. 	<p>Agree</p>	<p>The Contract with the supplier to deliver the LIS project contained a Project Implementation and Payment Plan (PIPP) with milestone and performance dependent payments, along with financial penalties for delayed delivery. The Contract defines Contract Specifications as the totality of deliverables to be provided by the Supplier in response to the procurement process of the Customer which are set out in Detailed Design Documentation, not the Contract, as per standard practice. There was a joint governance structure with the supplier pursuant to the Contract. This interface was strengthened as part of the reorganisation of the project in March 2019.</p>	<p>The Queensland Information Technology Contracting (QITC) framework forms the basis of all Queensland Government ICT contracts. These contain commercial incentives for both parties, along with joint governance arrangements.</p> <p>The contract template used by eHealth Queensland, Department of Health and available to other system stakeholders includes a table of accountabilities ensuring that a Contract Owner is identified from the customer and the vendor side and includes a structured approach to meetings with the vendor.</p> <p>As highlighted, Gateway Assurance is a key component of ICT governance within Queensland Health.</p> <p>Before a contract is placed with a vendor a Gate 3 review confirms whether the recommended investment decision is appropriate, whether both the client and the supplier can implement and manage the proposed solution and whether the necessary processes are in place to achieve a successful outcome after the contract is awarded.</p> <p>Additional controls will be implemented to measure, verify and implement contract performance.</p> <p>It is anticipated that the changes Queensland Health plans to roll out regarding the dissemination of Gateway Assurance to relevant governing bodies and project teams will enable a greater breadth of expertise to be leveraged and increased oversight.</p>



Action for Consideration	Agree/Disagree	Comments (LIS Project)	Comments (Additional)
<p>3. Ensure that current and future technology projects are set up with the right mix of skills and resources.</p>	<p>Agree</p>	<p>The LIS Project was underpinned by a resourcing plan that was determined by identifying the skills and resources required at each project stage. Performance against this plan was monitored by the LIS Project Board as part of the monthly project status report.</p> <p>QH acknowledges that whilst the plan was designed about a commercial off the shelf solution, the requirements for software changes caused increase resource requirements.</p>	<p>The implementation of new technology into the health setting is complex, requiring project management, technical and clinical user expertise.</p> <p>A standard component of the Gateway Assurance Gate 2 review, which is required prior to the commencement of a procurement process, is independent confirmation that the delivery strategy is robust and appropriate and project resources have appropriate skills and experience.</p> <p>Later Gateway Reviews also assure the resourcing components both in terms of capacity and capability, the appropriateness of the delivery approach and the delivery parameters.</p> <p>Improvements can be made in this area and it is anticipated that the changes Queensland Health plans to roll out regarding the increased dissemination of Gateway Assurance information will improve resource planning and management.</p> <p>The broader changes proposed to ICT governance – namely the focus on a collegiate delivery approach – will support a more optimal allocation of resources across the system to deliver the ICT portfolio, improved resource plans and timing to onboard project and specialist resources.</p>



Action for Consideration	Agree/Disagree	Comments (LIS Project)	Comments (Additional)
<p>4. Reflect on why projects have failed in the past and take timely actions to avoid making those mistakes again. Prior learnings must form part of the key considerations in managing project risks.</p>	<p>Agree</p>	<p>The LIS project considered the lessons learned from major technology projects throughout its lifecycle, including projects within the Queensland public sector, and LIS replacement projects in South Australia and Western Australia. A lessons learned register was maintained throughout the course of the project and at the cessation of the project, lessons learned were documented within the Project End Report, which has been shared with eHealth Queensland for consolidation within Queensland Health, as well as the Office of Assurance and Investment, Queensland Government Chief Customer and Digital Office.</p>	<p>Queensland Health will lead and implement improvements in the system to deliver improved value from ICT projects including several initiatives that aim to embed lessons learned into project delivery, ensuring ICT projects successfully add value to the health system.</p> <p>Queensland Health compiles lessons learned from ICT initiatives across the health system into a report each year. The report for 2018-19 is based on 62 assurance reviews of 55 initiatives.</p> <p>These reports are disseminated to key stakeholders, and published on the Queensland Health intranet. This facilitates the continuous integration of learnings into projects.</p> <p>The Queensland Health ICT-Enabled Initiative Assurance Framework is currently being updated to strengthen existing practices by mandating that lessons learned are formally considered at each gateway review and as part of project health checks.</p> <p>In addition, Queensland Health is currently compiling Lessons Learned Guidance material. This will provide practical guidance to the health system about how to establish a feedback loop where lessons are learned and actioned. It is anticipated this will be released towards the end of the financial year 2020-21.</p>



Comments received from Deputy Director-General, Department of Environment and Science



Department of
Environment and Science

Our Ref: CTS 19208 & CTS 19300/20
Your Ref: 12200 – Mayus Nath

Ms Karen Johnson
Acting Auditor-General
Queensland Audit Office
PO Box 15396
CITY EAST QLD 4002

Dear Ms Johnson

Thank you for your letter dated 2 September 2020 to the Department of Environment and Science (DES) regarding the Auditor-General's insights report on delivering successful technology projects. The Director-General has asked me to respond on his behalf.

DES is proud of the achievements of the Accelerating Science Delivery Innovation program and is confident the program will continue to deliver benefits for the scientific community across government, industry, research bodies and for Queenslanders.

DES is supportive of the actions identified in the Delivering Successful Technology Projects Report which reinforces the strong program/project governance and methodology currently deployed within the department.

Yours sincerely

A handwritten signature in blue ink, appearing to read "m.jacobs".

Dr Mark Jacobs
Deputy Director-General
Science and Technology
22 / 9 / 2020

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Website www.des.qld.gov.au
ABN 46 640 294 485



Comments received from Director-General, Department of Transport and Main Roads



Office of the
Director-General

Department of
Transport and Main Roads

Our ref: DG39999

Your ref: 12200

17 SEP 2020

Ms Karen Johnson
Acting Auditor-General
Queensland Audit Office
qao@qao.qld.gov.au

Dear Ms Johnson

Thank you for your letter of 2 September 2020 enclosing the proposed insights report to Parliament on delivering successful technology projects for my information and comment.

I note your acknowledgement of the Department of Transport and Main Roads' (TMR) Vessel Traffic Services Project and how TMR has worked towards achieving greater alignment between business units, suppliers, and project team and that the project has processes in place to reflect on lessons as it progresses. I also note that extensive consultation has been undertaken through the audit process with your auditor and representatives from TMR.

I support the intent of the report and agree with the value of the factors identified in the proposed report to expand the maturity of agency processes to deliver technology projects. TMR has taken a continuous improvement approach to maturing portfolio management, specifically governance processes, assurance/gating processes, project executive capability, and benefits delivery. TMR has recently conducted the annual review of the inflight and forward program of technology projects to reassess priorities, linkage to strategic outcomes and the deliverability of projects. TMR works closely with the Office of Assurance and Investment Review, under the Queensland Government Customer and Digital Group within the Department of Housing and Public Works, to ensure transparency and openness in the delivery of TMR initiatives.

TMR has been one of the leaders in the implementation of the Queensland Information Technology Contracting Framework, as well as developing the TMR FlexiProQr process which provides a flexible and agile procurement process to enable greater flexibility in ensuring solutions and contracts are able to pivot as required. This process has enabled an increased collaboration with the market and better contract outcomes through balanced risk and setting expectations.

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The proposed actions from the report will be coordinated through TMR's Information Technology Branch with oversight and governance by the Information and Systems Committee.

TMR appreciates the opportunity to provide comments on this proposed report. If you need any further information, please contact Ms Samara Dowling, Acting Chief Auditor, TMR, by telephone on

Yours sincerely

Neil Scales

Neil Scales
Director-General
Department of Transport and Main Roads



Comments received from Electoral Commissioner, Electoral Commission Queensland

File number: CCA/000039; 824

Your reference: 12200



11 September 2020

Ms Karen Johnson
Acting Auditor-General
PO Box 15396
CITY EAST QLD 4002
Email: gao@gao.qld.gov.au

Dear Ms Johnson

Thank you for your correspondence of 2 September 2020 regarding the Auditor-General's insights report on delivering successful technology projects.

I have reviewed the report and am satisfied with its contents.

I look forward to its tabling in parliament and its wider distribution to share learnings with the wider public sector.

I trust this information is of assistance.

Yours sincerely



Pat Vidgen PSM
Electoral Commissioner

B. Project details

Introduction

This section includes the key facts for the five technology projects we selected from the dashboard to develop our insights. They are the:

- Human Resources Information Solutions program—the Department of Housing and Public Works
- Laboratory Information System project—the Department of Health
- Accelerating Science Delivery Innovation program—the Department of Environment and Science
- Vessel Traffic Services project—the Department of Transport and Main Roads
- Fleet Management System Replacement project—QFleet, the Department of Housing and Public Works.

Based on research, we have identified factors that can make a difference to the success of projects. They are:

 Leadership	Senior leaders actively lead and challenge.
 Alignment	Projects are aligned to business outcomes.
 One team	Internal and external teams work towards the same goals.
 Skills	The team has the skills and capacity to match the challenge.
 Learnings	Learnings are identified and acted on.

For each of the five programs/projects, we have highlighted the factors that needed greater emphasis. They are identified by the above icons.

Human Resources Information Solutions program (budget: \$101.3 million)

The Human Resources Information Solutions program began in September 2012, with an original estimated cost of \$101.3 million. Initially, the program was to establish a fully integrated payroll and human capital management solution as outsourced services. Due to a change in government policy, it changed to implementing payroll and human capital management solutions for four entities: Queensland Fire and Emergency Services, the Queensland Ambulance Service, Queensland Corrective Services, and the Inspector-General Emergency Management.



The program involved:

- transitioning all four entities from their legacy system (which was no longer supported by its developer) to a supported payroll system
- implementing human capital management (staff recruitment, performance, and development) solutions.

We previously reported on this program in [Monitoring and managing ICT projects \(Report 1: 2018–19\)](#).

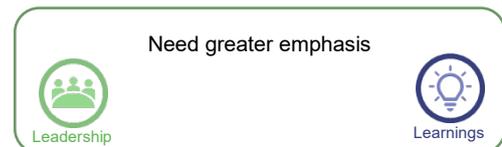
Key facts

An executive steering committee leads the program. Two program boards (payroll and integration, and human capital management) support the committee. A representative of the Department of Housing and Public Works is the chair of the committee and the two boards.

Membership of the committee includes senior officers from Queensland Fire and Emergency Services, the Queensland Ambulance Service, and Queensland Corrective Services. Representatives from the Department of the Premier and Cabinet and Queensland Treasury, and program leaders from the Department of Housing and Public Works are observers on the committee, which does not report to any organisational governance committees.

Payroll program

The payroll program involved transitioning the in-scope entities from the legacy system to a supported system. As part of developing this report, we looked at project documents for the transition of Queensland Ambulance Services and Queensland Fire and Emergency Services.



Queensland Shared Services owns and manages both the old and new systems and most of the business processes. It is the existing service provider for the in-scope entities.

The two projects included subject matter experts from the business from the start and the teams included members with technical, change management and project management skills.

Project documents show that there was emphasis on ensuring the new system produced the expected results.

Human capital management program

The implementation of the human capital management program was not as successful.



- Queensland Fire and Emergency Services implemented four out of six human capital management modules in December 2017, with the fifth and sixth modules implemented in July 2018 and August 2019, respectively. Project documents indicate that at the time the project closed there was limited uptake of the modules. The project closure report states that the internal and external teams did not always understand the project scope and that capability and expertise were lacking at times.
- Queensland Corrective Services approved a business case for implementing their human capital management system in March 2018. It paused the project in December 2019, stating business priorities and lack of readiness as the main reasons. The cost to date for this project is \$6.5 million.
- The Queensland Ambulance Service project did not progress beyond developing the business case. Program documents indicate that work on developing the business case commenced in 2017. The cost of this project is \$0.9 million.

Figures 3B1 and 3B2 show the program costs and timelines as recorded in project documents.

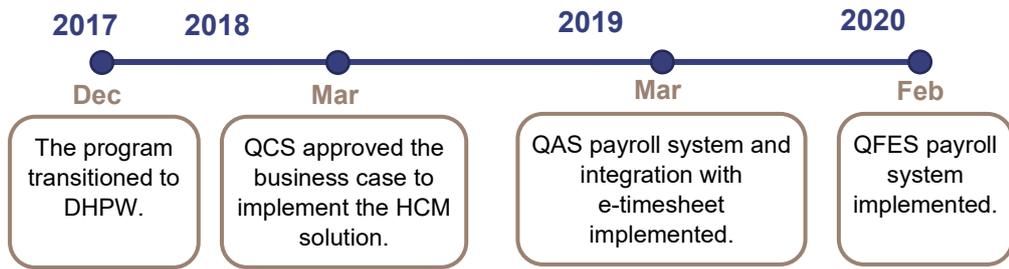
Figure 3B1
Total cost of the program

Program component	Actual/budget at 30 June 2020
Program management	\$24.6 mil.
Payroll replacement and integration for Queensland Ambulance Service (\$12.8 million), Queensland Corrective Services (\$5.6 million), the Inspector-General Emergency Management, and Queensland Fire and Emergency Services (\$5.3 million) (these projects are completed and closed)	\$23.7 mil.
Human capital management solution for Queensland Fire and Emergency Services (\$16.2 million) (closed), Queensland Corrective Services (\$6.4) (paused), and Queensland Ambulance Service (\$0.9 million) (business case complete)	\$23.5 mil.
Phase one of time and attendance project, time sheet integration, and integration-as-a-service (completed and closed)	\$4.3 mil.
Other, for example: e-timesheet, system stabilisation, design and integration, and business continuity	\$8.0 mil.
Actual amount spent	\$84.1 mil.
Remaining budget to complete projects, and contingency	\$17.2 mil.
Total budget	\$101.3 mil.

Note: Program management is an overhead cost that should be allocated across all the projects.

Source: Queensland Audit Office from Department of Housing and Public Works project documents.

Figure 3B2
Timeline of key decisions since our last report



Note: DHPW—Department of Housing and Public Works; QCS—Queensland Corrective Services; QAS—Queensland Ambulance Service; QFES—Queensland Fire and Emergency Services; HCM—human capital management.

Source: Queensland Audit Office from Department of Housing and Public Works project documents.

Laboratory Information System project (budget: \$64 million)

The Department of Health started this project in March 2015 to replace its legacy laboratory information system (in operation since 1996). The original estimated cost was \$64 million. The Department of Health planned to buy a new, commercial off-the-shelf system for 36 laboratories across the state.



It estimates that it had completed 30 per cent of the project by December 2019 but discontinued the project in June 2020 with actual expenses of \$51.4 million.

Key facts

In 2012, Queensland Government reviewed information and communication technology across departments. The report stated that the current laboratory information system was one of the top ten high risk systems and had an end of life in June 2020. The report stated that the Department of Health had advised that they needed seven years lead time to replace the system.

In November 2017, after completing the procurement process and a proof of concept with the preferred supplier, the department endorsed the business case to replace the laboratory information system.

Health Support Queensland, a business unit of the Department of Health, led this project. It was initially set up as a program with five projects. Membership of the program board included executives from across the department (for example, clinician leaders, senior technology service providers, senior users, and senior people from internal audit and legal). The eHealth Executive Committee (the peak digital governance body of the Department of Health) and Health Support Queensland's executive leadership team also received project reports for information.

In January 2018, the department signed the contract with the preferred supplier and in March 2018, the supplier advised the department that the product needed software development. Going into the contract, the department believed that it was a commercial off-the-shelf product and would not need development.

In June 2018, the new project leader commissioned a review that highlighted issues with governance, communications, resource management, and the supplier’s ability to deliver the product. In March 2019, the department restructured the project and met with the supplier more often. In August 2019, the department agreed on a minimum acceptable product with the supplier. The department determined that this would extend the project timeline and require additional funding.

In December 2019, the department commissioned a project health check and an internal review and options analysis for the way forward. In these reviews the department found that the business case for the project was significantly over-stated. As part of the options analysis, the department obtained an offer for extending the contract with the existing supplier.

The department also commissioned an external review to confirm the assertions within the options analysis. It determined that the best option was to discontinue the project and upgrade the existing system. The reviews also highlighted that the department still carries the risk of an ageing system and will need to consider replacing it in the future.

Figures 3B3 and 3B4 show the project costs and timelines as recorded in project documents.

**Figure 3B3
Project costs**

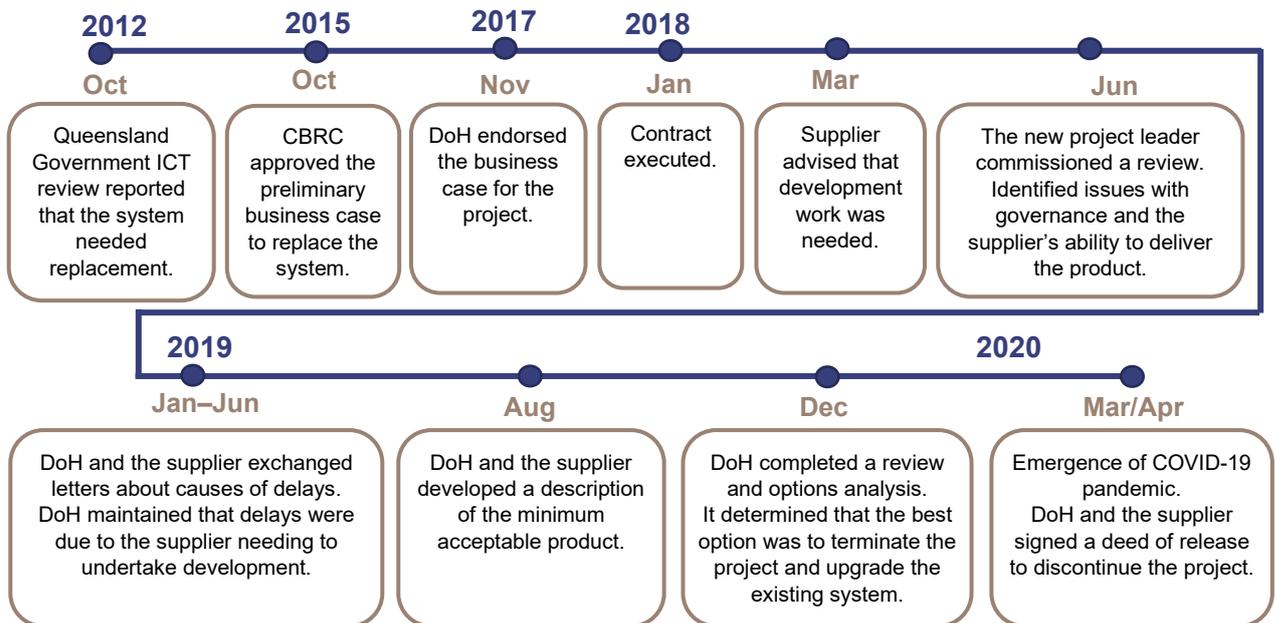
Project component	Actual at 30 June 2020
Project initiation and pre-procurement	\$2.4 mil.
Procurement including tender process, proof of concept and business case	\$11.6 mil.
Design, build and test	\$37.4 mil.
Actual amount spent	\$51.4 mil.

Note: The remaining budget when this project was cancelled was \$12.6 million.

Source: Queensland Audit Office from Department of Health project documents.



Figure 3B4
Timeline of key decisions



Note: ICT—information and communication technology; DoH—Department of Health; CBRC—Cabinet Budget Review Committee.

Source: Queensland Audit Office from Department of Health project documents.

Accelerating Science Delivery Innovation program (budget: \$42.4 million)

The Science and Technology function, currently a division of the Department of Environment and Science, began this program in July 2017 to refresh critical systems and infrastructure. The estimated cost was \$42.4 million.



The program includes replacing high performance computing infrastructure, enhancing cloud computing and storage, and implementing digital collaboration technologies for the scientific community across government, industry, and research bodies.

Program documents indicate that one of the expected outcomes is innovation in scientific data that can be used by the government on issues like biodiversity, land use, and the quality of water on the Great Barrier Reef.

Key facts

The strategic steering committee provides strategic guidance to the program leadership team. Members of the committee include representatives from business areas; technology service providers; the Department of Natural Resources, Mines and Energy; Queensland Government Chief Customer and Digital Group; Commonwealth Scientific and Industrial Research Organisation; and the University of Queensland.

The program board is the governance body responsible for running the program. Members include business leaders and senior technology service providers. Each project has a board with relevant representation from the business and suppliers.

The Department of Environment and Science has implemented design principles for this program that enable agility at both program and project levels. Project documents indicate that projects deliver benefits as they progress, and the department reviews them annually. At the review time, the department can close the projects or roll them into other related projects for re-prioritisation, based on business and economic needs.

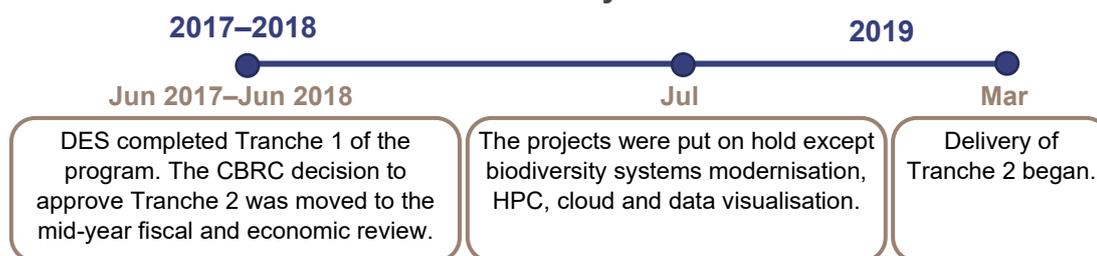
This program is still in progress. Reports on projects that have closed indicate the project teams had relevant skills and capabilities. However, one closure report indicated that two supplier teams used different systems development methodologies. The project documented learnings relating to communications between internal and external teams. The report also included assessments and learnings for project boards. Figures 3B5 and 3B6 show the program costs and timelines as recorded in project documents.

Figure 3B5
Total cost of the program

Program component	Actual/budget at 30 June 2020
Ecosciences Queensland (economic value and business case)	\$0.3 mil
Data improvements and machine learning	\$2.5 mil.
Implemented high performance computing, scientific collaboration, and data visualisation	\$5.1 mil.
Biodiversity systems modernisation, included digital collections, high speed network connectivity, requirements for survey, ecosystems and sightings platform, and procurement and onboarding of Queensland Biodiversity and Ecology Information System	\$6.5 mil.
Soil and land information modernisation, including mobile apps to collect soil data and knowledge, digital soil map management tools and preparation to implement increased open access to the data	\$1.4 mil.
Actual amount spent	\$15.8 mil.
Remaining allocation	\$26.6 mil.
Total budget	\$42.4 mil.

Source: Queensland Audit Office from Department of Environment and Science project documents.

Figure 3B6
Timeline of key decisions



Note: DES—Department of Environment and Science; CBRC—Cabinet Budget Review Committee; HPC—high performance computing.

Source: Queensland Audit Office from Department of Environment and Science project documents.

Vessel Traffic Services project (budget: \$36.2 million)

The Department of Transport and Main Roads began the Vessel Traffic Services project in April 2014. It involves replacing legacy systems with an integrated decision support tool for the department's five vessel traffic service centres in Queensland.



The main types of services at these centres are port operations and coastal services. Their key functions include:

- tracking position and movement of ships along the coast and into the ports
- communicating with the ships and providing guidance if they have a problem
- enabling online booking for ships to enter the ports, and publishing information on ship movements.

Key facts

Maritime Services Queensland, a business unit of the Department of Transport and Main Roads, leads this project. The project board is accountable for the success of the project, with monthly reporting to the project leader. The project board includes business leaders and senior technology service providers.

The project has been in progress for more than six years; it was originally planned to complete in four years. In the first one and a half years, the department selected a preferred supplier and performed a pre-contract analysis to understand the suitability of the software for its technical and operating environment. This resulted in improvements in business practices, and a longer software support period prior to signing the contract.

The suppliers did not deliver the detailed design on time, and there were quality concerns in the testing phase. This was within the first year of awarding the contract.

After experiencing further delays in the project, the department determined a minimum acceptable product for the final component of the software. The project has processes in place to reflect on lessons as it progresses.

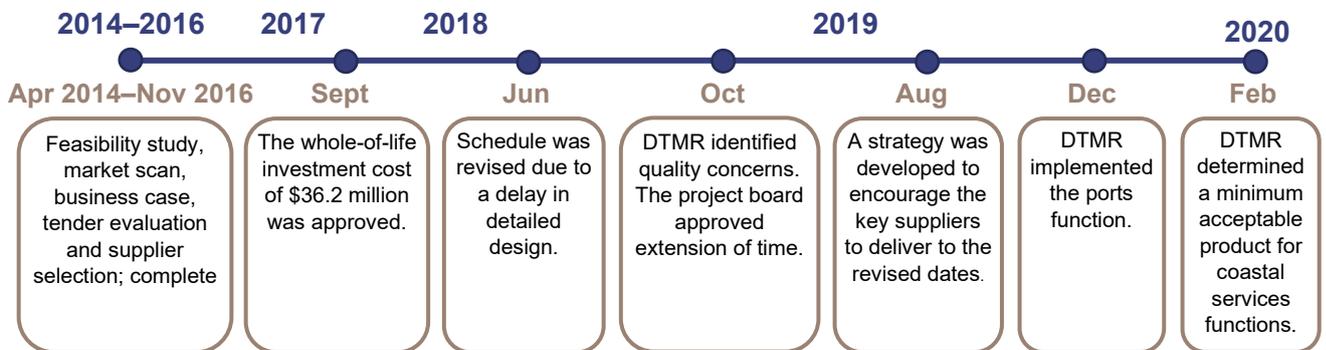
Figures 3B7 and 3B8 show the program costs and timelines.

Figure 3B7
Total cost of the project

Project component	Actual/budget at 30 June 2020
Procurement including market scan, tender, selection of preferred supplier and using the software to assess how it fits with the business and what the business can change and standardise	\$3.4 mil.
Project planning and design	\$4.0 mil.
Ports system build and release	\$6.5 mil.
Coastal services (cost to date)	\$1.3 mil.
Actual amount spent	\$15.2 mil.
Remaining budget for project finalisation, including software and hardware support and maintenance over 10 years	\$21.0 mil.
Total budget	\$36.2 mil.

Source: Queensland Audit Office from Department of Transport and Main Roads (DTMR) project documents.

Figure 3B8
Timeline of key decisions

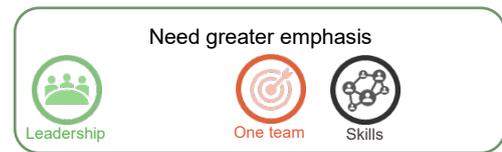


Note: DTMR—Department of Transport and Main Roads.

Source: Queensland Audit Office from Department of Transport and Main Roads (DTMR) project documents.

Fleet Management System Replacement project (budget: \$13.9 million)

The Department of Housing and Public Works began a project in 2017 to implement a new fleet management system for an estimated cost of \$13.9 million. Other agencies that were part of this project at the beginning were:



- the Public Safety Business Agency, as the service provider for Queensland Fire and Emergency Services and the Queensland Police Service. The Public Safety Business Agency pulled out of the project in April 2019.
- the Queensland Ambulance Service. It has currently placed its project on hold.

The Department of Housing and Public Works was the lead agency and has entered a standing offer arrangement with the preferred supplier. The Public Safety Business Agency and/or the Queensland Ambulance Service can use this arrangement in the future.

Key facts

QFleet, a business unit within the Department of Housing and Public Works, leads this project. Membership of the project board includes senior business leaders and senior technology service providers.

The project has been in progress for close to three years, per the plans outlined in the business cases. The procurement process took the first two years. During this time, QFleet assessed the software in the new system and performed a gap analysis against its business requirements. QFleet's business areas were involved from the start of this project.

After signing the contract, QFleet completed the gap analysis and started negotiating project timelines. It held workshops with the supplier to develop the implementation plan, but they did not reach agreement. This has caused a pause in the project.

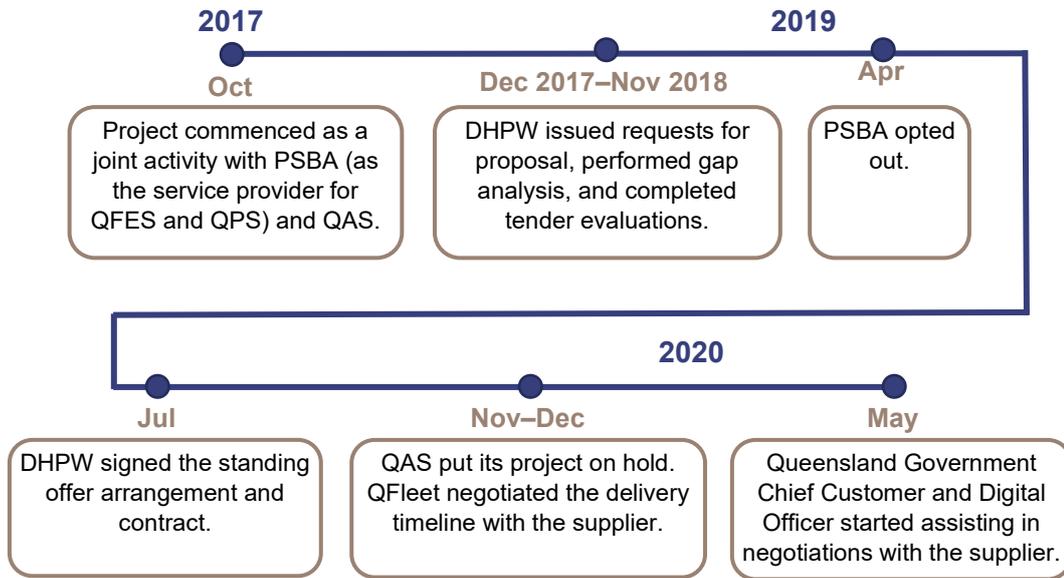
QFleet has re-directed project resources while the Queensland Government Chief Customer and Digital Officer is assisting in negotiating with the supplier for a way forward to implement a minimum acceptable product.

Figure 3B9
Total cost of the project

Project component	Actual/budget at 30 June 2020
Procurement, including tender process, contract negotiation and execution, requirements documents and gap analysis	\$2.4 mil.
Implementation phase	\$2.5 mil.
Actual amount spent	\$4.9 mil.
Remaining budget	\$9.0 mil.
Total	\$13.9 mil.

Source: Queensland Audit Office from Department of Housing and Public Works project documents.

Figure 3B10
Timeline of key decisions



Note: PSBA—Public Safety Business Agency; QFES – Queensland Fire and Emergency Services; QPS—Queensland Police Service; QAS—Queensland Ambulance Services; DHPW—Department of Housing and Public Works.

Source: Queensland Audit Office from Department of Housing and Public Works project documents.



C. How we prepared the report

About the Auditor-General's insights

Our insights on technology projects are based on our substantial experience in undertaking financial and performance audits across the Queensland public sector. To prepare this report, we analysed our reports, looking for patterns and trends in the success or failure of technology projects. The reports included:

- *Effectiveness of the State Penalties Enforcement Registry ICT reform* (Report 10: 2019–20)
- *Monitoring and managing ICT projects* (Report 1: 2018–19).

We also examined national and international reports.

Interviews

We interviewed key people in the technology sector in Queensland, including:

- the Queensland Government Chief Customer and Digital Officer and his staff
- senior leaders responsible for delivering technology projects
- senior technology industry leaders.

Document review

Technology projects from the Digital Projects Dashboard

For this report we selected, from the Queensland Government Digital Projects Dashboard, five programs/projects covering 11 entities. We analysed various documents provided by the departments for each project/program.

We included the Human Resources Information Solutions program in this report because it is one of the largest programs on the dashboard. In *Monitoring and managing ICT projects* (Report 1: 2018–19), which was tabled in parliament in July 2018, we highlighted that this program and another project both took a long time before delivering functional systems.

The Human Resources Information Solutions program is still in progress. For this report, we reviewed documents since December 2017 (which was the cut-off date for the fieldwork of Report 1: 2018–19).

Other technology projects

This report includes brief case studies of the Electoral Commission of Queensland's Election Gateway Project and Sydney Water's replacement of its billing system as part of the implementation of its customer experience program.

While the Election Gateway Project is not on the dashboard, it has statewide implications, and some of its learnings can be shared. We are aware of the parliamentary inquiry into online publication of preliminary and formal counts of the votes cast in the local government elections and the state by-elections held on 28 March 2020. This report does not include a detailed review of the project itself or of any technical issues.

We have included Sydney Water's project to share the learnings and good practices it has recorded. As part of this document review, we confirmed the findings in a meeting with the chief information officer and program director for the part of the project we focused on.



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