

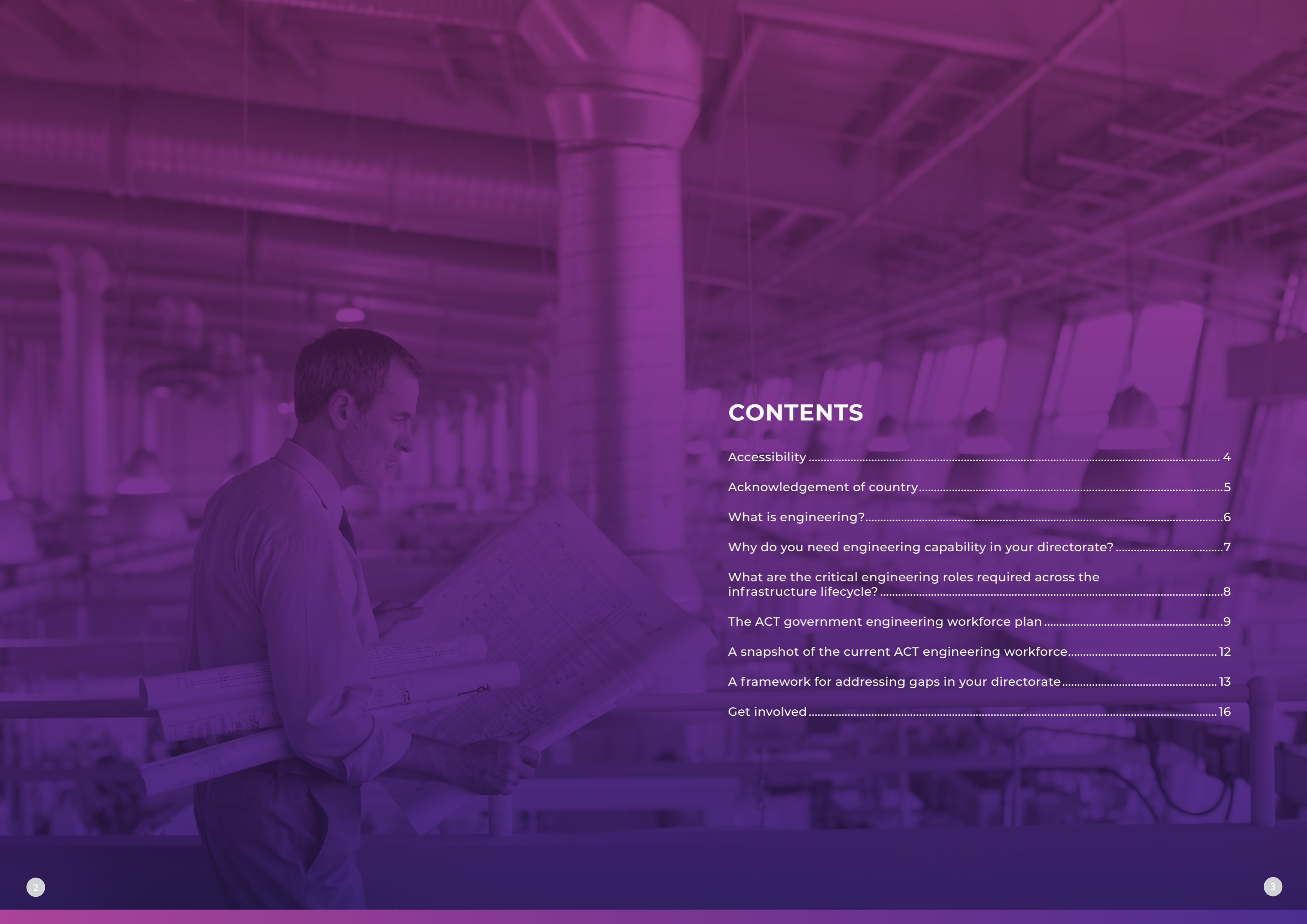


**ACT**  
Government

# DIRECTORATE ENGINEERING WORKFORCE FRAMEWORK

2020





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## ACCESSIBILITY

The ACT Government is committed to making its information, services, events and venues accessible to as many people as possible.

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If English is not your first language and you require the translating and interpreting service, please call the Telephone Interpreter Service on 131 450.

If you are deaf or hearing impaired and require assistance, please call the National Relay Service on 133 677.

## ACKNOWLEDGEMENT OF COUNTRY

The ACT Government acknowledges the Australian Aboriginal and Torres Strait Islander peoples of this nation. We acknowledge and pay our respects to Elders, past, present and future of the Ngunnawal people as the Traditional Custodians of the lands on which we live and where we conduct our business. We recognise the significant contribution of the Ngunnawal people and neighbouring Nations—the Ngambri, Ngarigo, Wolgalu, Gundungurra, Yuin and Wiradjuri to the Canberra region. For thousands of years these Nations have maintained a tangible and intangible cultural, social, environmental, spiritual and economic connection to these lands and waters.



## WHAT IS ENGINEERING?

Engineering is about the creation or application of technology to investigate problems and offer scientifically-based solutions to these problems. It uses scientific principles to investigate a human or environmental problem that is presented or identified, and then develop, implement and manage a solution to solve that problem.<sup>1</sup>

Engineers are scientists, inventors, designers, builders and great thinkers.

They improve the state of the world, amplify human capability and make people's lives safer and easier through designing and developing essential infrastructure and services - such as power, water, housing, transport and communications - which underpin almost every aspect of our everyday lives.

An engineer is responsible for the research, design, production, operation and maintenance of infrastructure and services.

From an engineering design perspective, there are three fundamental pillars:

1. Quality
2. Safety
3. Environmental sustainability.

## WHY DO WE NEED AN ENGINEERING FRAMEWORK?

The ACT Government Engineering Workforce Plan was released in 2020. To support engineering workforce planning the Directorate Engineering Framework will enable each Directorate to:

 <p>Identify the roles that require engineering capability</p>	 <p>Understand their roles and responsibilities</p>	 <p>Address the workforce risks within their own Directorate</p>
 <p>Contribute to building capacity and resilience across the ACT Government</p>	 <p>Reduce the cost of poor decisions that lack the necessary engineering expertise</p>	

<sup>1</sup> Engineering Futures 2035: A scoping study, [http://www.aced.edu.au/downloads/Engineering%20Futures%202035\\_Stage%201%20report%20for%20ACED\\_May\\_16\\_2019.pdf](http://www.aced.edu.au/downloads/Engineering%20Futures%202035_Stage%201%20report%20for%20ACED_May_16_2019.pdf)

## WHY DO YOU NEED ENGINEERING CAPABILITY IN YOUR DIRECTORATE?

To understand why engineering capability is necessary, we must first consider the challenges we face in society, and the role engineers can play in addressing these challenges.



01

**The ACT has a growing population that is driving our infrastructure needs.**

Engineers help by planning and designing future-proofed infrastructure and services that will meet our current and future needs.



02

**As infrastructure asset owners, we face increased demands for improved service, longer asset life and greater accountability.**

Engineers are skilled at using data and cutting-edge technology to improve Directorate's performance and reduce the cost of assets.



03

**We want to make the most out of technology and digital transformation.**

Engineering knowledge and skills can help deliver infrastructure improvements through technology enhancements and digital engineering practices.



04

**The ACT Government has set ambitious environmental targets in their Climate Change Strategy 2019-2025, which require urgent ongoing action to reduce carbon emissions by 50-60%.**

Engineers can collaborate with others in the sector to innovate and design new ways to reduce emissions and build a more sustainable Canberra.

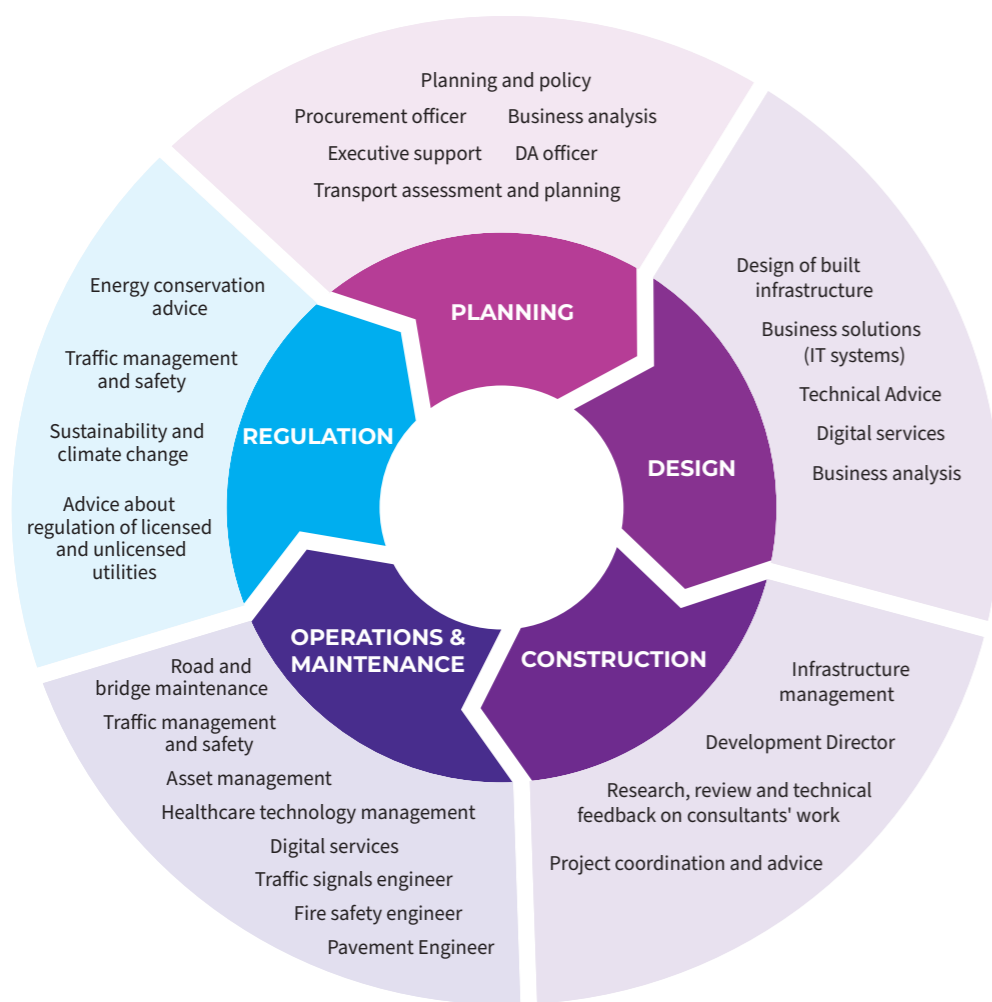
# WHAT ARE THE CRITICAL ENGINEERING ROLES REQUIRED ACROSS THE INFRASTRUCTURE LIFECYCLE?

As well as their technical engineering skills, engineers share a broad skillset around critical thinking and problem-solving, making them a valuable addition to any infrastructure team.

There are many infrastructure roles across the ACT Government that utilise the broad skillset of engineers. These can be technical or engineering-specific roles, such as a Civil Engineer, or more expansive roles that require an engineer's ability to

critically think and problem-solve, such as a Project Manager. Often, job titles do not always reflect the engineering capabilities required in such roles.

Here are some of the many roles that engineers perform, aligned with the infrastructure cycle.



**70%** of ACT engineers are in roles that utilise their engineering skills



## THE ACT GOVERNMENT ENGINEERING WORKFORCE PLAN

Developing and promoting an innovative and skilled engineering workforce across the ACT Government is key to providing the best strategic advice across Canberra's key infrastructure projects, as well as other areas where we need effective engineering support.

The ACT Government Engineering Workforce Plan is focused on attracting, developing and retaining the workforce for the future, and will be brought to life through the implementation of a range of actions that will see us:

1. Boost the recruitment of engineers, targeting entry-level and diverse groups;
2. Optimise our existing ACT Government engineering workforce;
3. Strengthen the engineering profession in the ACT; and
4. Collaborate with key stakeholders to implement the Workforce Plan.

- Do you own assets?
- Do you need to plan and deliver infrastructure construction projects?
- Do you need to maintain track, civil, signal, electrical and control system assets, or coordinate incident response?
- Do you need to manage risk proactively?
- Do you need to work with partners in the private sector, combining technical know-how, commercial acumen and effective negotiation skills?



**YOU NEED ENGINEERS**



Engineers play critical and diverse roles in helping the government deliver their priority Infrastructure projects by combining industry knowledge and cutting-edge technology to innovate and transform.

**The Directorate Engineering Workforce Framework has been developed to guide directorates in taking practical steps towards realising the benefits of the Workforce Plan.**

The actions from the Workforce Plan requiring specific action at the Directorate level are identified below. For each action, Director-Generals will work with the ACT Chief Engineer to deliver the action required.

1. Boost the recruitment of engineers, targeting entry-level and diverse groups	2. Optimise our existing ACT Government engineering workforce	3. Strengthen the engineering profession in the ACT	4. Collaborating with key stakeholders to implement the Workforce Plan
<p><b>1A:</b> Assist the ACT Government Graduate program to improve the attraction and retention of engineering graduates and ensure engineering positions are identified and available within each cohort</p> <p>Timeframe: Short-term – one year</p>	<p><b>2A:</b> Work with ACT Government Directorates and Agencies to incorporate engineering requirements into their workforce plans, including identifying current skill shortages</p> <p>Timeframe: Short-term – one year</p>	<p><b>3A:</b> Develop a Digital Engineering Strategy and associated training program</p> <p>Timeframe: Medium-term – two to three years</p>	<p><b>4A:</b> Establish an ACT Government Engineers network and online hub to share knowledge and collaborate on projects</p> <p>Timeframe: Short-term – one year</p>
<p><b>1B:</b> Develop an ACT Government engineering cadet and internship program to support young people to undertake formal engineering studies with practical work experience</p> <p>Timeframe: Long-term – four to five years</p>	<p><b>2B:</b> Introduce a government to industry secondment program so engineers can gain experience in both the public and private sector to better understand the working requirements of each sector</p> <p>Timeframe: Medium-term – two to three years</p>	<p><b>3B:</b> Develop policies and procedures to ensure compliance with engineers' registration legislation</p> <p>Timeframe: Medium-term – two to three years</p>	
<p><b>1C:</b> Target recruitment to encourage diversity so that the engineering workforce is more representative of the Canberra community</p> <p>Timeframe: Long-term – four to five years</p>		<p><b>3D:</b> Create an ACT Government-funded Technology and Innovation Fund to support research and innovation in the engineering and infrastructure sector</p> <p>Timeframe: Medium-term – two to three years</p>	



**The ACT Government Engineering Workforce Plan and the Directorate Engineering Workforce Framework directly support the four key themes from the ACT Statement of Ambition - to attract and retain talented people, diversify our local economy, deliver better metropolitan infrastructure and embrace the digital mindset.**

The Workforce Framework will ensure that your engineering capabilities are being effectively met by analysing your current engineering workforce, identifying any gaps and then implementing and reviewing subsequent actions taken to ensure these gaps are filled and you have the correct workforce for the future.



The aim of this framework is to provide a sequence of data collection and considerations, which will position each Directorate to take the actions they need to recruit and sustain the right engineering workforce moving forward. Therefore, it is not prescriptive regarding details of data, nor does it contain specific templates.

Directorates are encouraged to use the Directorate Engineering Workforce Framework to develop or update their own engineering workforce plan, which will ensure they have the right engineering capability to meet their needs.

The actions identified in the section 'Implementing the ACT Government Engineering Workforce Plan' section of the Workforce Plan offer many approaches for you to consider when seeking to increase the capacity and capability of your engineering workforce.

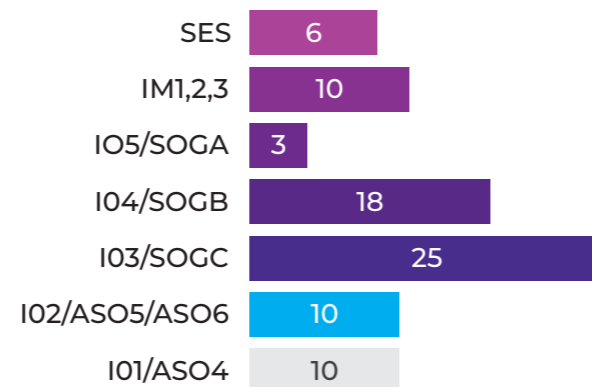
# A SNAPSHOT OF THE CURRENT ACT ENGINEERING WORKFORCE

To understand what we want the future engineering workforce to look like, it is important to understand what it currently looks like. The data on this page has been primarily sourced from the online survey of ACT engineers, supplemented with additional data to compare the ACT Government engineering workforce within the wider Australian context – where possible.

## STAFF PROFILE

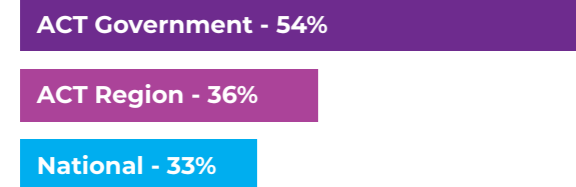
This diagram identifies the substantive classification of engineers across the ACT Government. It indicates the current low number of staff at entry-level and lower classifications.

We need to increase the number of engineers at these lower levels, as well as the IO5/SOGA level, shifting our engineering cohort to be more representative of a 'pyramid' shape. This will assist the ACT Government in succession planning activities, such as recruitment and talent management.

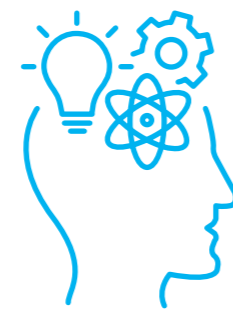


## ENGINEER AGE PROFILE

### ENGINEERS OVER 45 YEARS OLD



With 54% of our ACT Government engineers being at least 45 years old, we are older than engineers across the ACT region and nationally.



## ACT GOVERNMENT EXPERIENCE

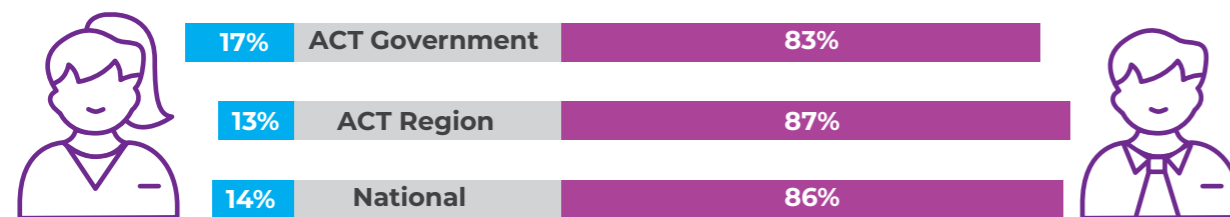
1 to 5 years

## ENGINEERING EXPERIENCE

20 to 25 years

Though our engineers are very experienced, the average time spent in the ACT Government is considerably less than in other sectors.

## GENDER REPRESENTATION



## GENDER PAY GAP IN THE ACTPS (2018-19)



There is an opportunity to make the ACT Government an employer of choice for female engineers.

# A FRAMEWORK FOR ADDRESSING GAPS IN YOUR DIRECTORATE

The following checklist is provided to assist Directorates in developing their Engineering Workforce Plan. If you already have a Workforce Plan for your Directorate, the engineering component can be embedded in your existing plan or sit as an attachment

MAIN STEPS AND ACTIVITIES	RESPONSIBILITY		LINKS TO WORKFORCE PLAN (WFP) AND ADAPT TOOLKIT (AT)
	DIRECTOR-GENERAL OR REPRESENTATIVE	HR TEAM	
<b>1. ANALYSE YOUR EXISTING WORKFORCE</b>			
▶ Allocate a contact within your team to drive the operational workforce plan.	<input checked="" type="checkbox"/>		
▶ Gather and segment your data: numbers, demographics (examples include level, age range, gender, source, tenure, time at level, time in current role etc.).		<input checked="" type="checkbox"/>	WFP: p.18-20 AT: p.15-17
▶ Determine your critical engineering roles. For example, for each engineering role, ask "if the occupant of this role left the organisation, what would be the impact?"	<input checked="" type="checkbox"/>		AT: p.18-21
▶ What has been your attrition of engineers over the past three years?		<input checked="" type="checkbox"/>	WFP: p.24 AT: p.16
▶ What sources have your previous engineering recruits come from? For example, Canberra graduates, other city graduates, regional graduates, public sector or overseas.		<input checked="" type="checkbox"/>	
▶ Is anything currently being actively done to identify and manage succession risks?		<input checked="" type="checkbox"/>	AT: p.24-26
<b>2. UNDERSTAND WHAT YOU NEED</b>			
▶ What work is in the pipeline that requires engineering capability?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WFP: p.11, 19, 20, 22, 23 AT: p.10-12
▶ Where are your biggest risks in relation to engineering numbers or capability?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WFP: p.25 AT: p.24-26
▶ Consider whether you need to be sourcing staff in a different way. For example, to collaborate with other Directorates or to attract more female, ATSI or skilled migrant candidates.		<input checked="" type="checkbox"/>	WFP: p.26, wAction 1C AT: p.24

Note that these activities are not prescriptive, some steps may not be applicable to some Directorates – they are intended as triggers to assist each Directorate cover all relevant bases in planning their engineering workforce.

MAIN STEPS AND ACTIVITIES	RESPONSIBILITY		LINKS TO WORKFORCE PLAN (WFP) AND ADAPT TOOLKIT (AT)
	DIRECTOR-GENERAL OR REPRESENTATIVE	HR TEAM	
<b>3. DOCUMENT YOUR GAPS</b>			
▶ Determine the high-level and detailed gaps in resources	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AT: 22-23 WFP: p.24
▶ How prepared are you right now for the future?	<input checked="" type="checkbox"/>		WFP: p.19-23 AT: p.24-26
▶ Given these gaps, what are your risks?	<input checked="" type="checkbox"/>		WFP: p.25 AT: p.26-28
▶ How are you addressing your gaps right now? For example, recruitment is underway, a non-engineer is performing the role, or the role is not being performed.		<input checked="" type="checkbox"/>	
<b>4. REVIEW AVAILABLE STRATEGIES AND INITIATIVES</b>			
▶ Given your risk areas, what in the ACT Government Workforce Plan could help to address some of your gaps? Note that HR areas are key to helping leaders manage succession risks.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Review items actionable by Directorates
▶ Document the strategies and initiatives most relevant for your Directorate against the risks, prioritise them, and confirm any flow on impacts to budget.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Review items actionable by Directorates AT: p.30-33
▶ Work with your HR area and the Chief Engineer's Office to finalise your plan.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WFP: p.29, Action 4D

MAIN STEPS AND ACTIVITIES	RESPONSIBILITY		LINKS TO WORKFORCE PLAN (WFP) AND ADAPT TOOLKIT (AT)
	DIRECTOR-GENERAL OR REPRESENTATIVE	HR TEAM	
<b>5. IMPLEMENT THE CHANGES</b>			
▶ Confirm your priorities still stand after budget considerations and any change from the previous step.	<input checked="" type="checkbox"/>		
▶ Document the final list of priorities so you can communicate with your staff, allocate responsibility for actions and monitor progress.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AT: p.33 - 36
▶ Determine your critical engineering roles. For example, for each engineering role, ask "if the occupant of this role left the organisation, what would be the impact?"	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
▶ Start delivering on your priority list.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
<b>6. REVIEW YOUR PROGRESS</b>			
▶ Ensure that you record the actions you take against priorities, so that this information can be provided to the Office of the Chief Engineer, as required.	<input checked="" type="checkbox"/>		WFP: p.29, Action 4D
▶ Review progress on a regular basis (quarterly is a reasonable time frame).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	AT: p.37 - 39
▶ Change approach to implementation where needed.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
▶ Stay connected with the Office of the Chief Engineer about your progress. Contact us at <a href="mailto:ChiefEngineer@act.gov.au">ChiefEngineer@act.gov.au</a> .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	WFP: p.29, Action 4D



Encourage managers to work with your HR Team to look for solutions to their engineering workforce gaps

Note that these activities are not prescriptive, some steps may not be applicable to some Directorates – they are intended as triggers to assist each Directorate cover all relevant bases in planning their engineering workforce.



Refer to *ADAPT – An ACT Public Service Strategic Workforce Planning Toolkit* for further information, support and useful workforce templates

Note that these activities are not prescriptive, some steps may not be applicable to some Directorates – they are intended as triggers to assist each Directorate cover all relevant bases in planning their engineering workforce.





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## GET INVOLVED

[act.gov.au/majorprojectscanberra](https://act.gov.au/majorprojectscanberra)

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