ENGINEERS
AUSTRALIA

National Competency Standard for Engineering 2026

July 2026

National Competency Standard for Engineering (NCSE) 2026

Engineers Australia — July 2026

Engineers Australia, Engineering House, 11 National Circuit Barton ACT 2600.

ISBN: 978-1-7637983-5-9

Contents

The NCSE should be read in conjunction with the following documents.

Document	Owner, release date
International Engineering Alliance (IEA) Graduate Attributes and Professional Competencies (GAPC) at IEA GAPC 2021 Refer to IEA website for any updated information: internationalengineeringalliance.org	International Engineering Alliance Release 21 June 2021
NCSE 2026 Competency User Guide for Applicants for Entry-to-Practice Assessment	Engineers Australia July 2026
NCSE 2026 Competency User Guide for Education Providers	Engineers Australia July 2026
NCSE 2026 Competency User Guide for Applicants for Independent Practice (Chartered) Assessment	Engineers Australia July 2026
NCSE 2026 Supplement on Differentiating the Occupational Categories in the Engineering Team	Engineers Australia July 2026
Glossary of Terms	Engineers Australia July 2026
Engineers Australia's Professional Standards Framework (PSF) www.engineersaustralia.org.au/about-us/professional-standards-framework	Engineers Australia August 2023
Engineers Australia Code of Ethics and Guidelines on Professional Conduct www.engineersaustralia.org.au/publications/code-ethics	Engineers Australia August 2022
Area of Practice (AoP) Guides for Independent Practice	Engineers Australia

Preface

The 2026 National Competency Standard for Engineering (NCSE) defines the threshold standard for Entry to Practice (EtP) and Independent Practice (IP) in Australia, in each of the occupational categories. These occupational categories are defined by the International Engineering Alliance (IEA), and comprise the engineering team – professional engineer, engineering technologist, engineering associate. The NCSE informs engineering practice and is the Standard to which competency is assessed against.

Engineering is essential to meeting the needs of people, economic development, and the provision of services to society. The increasing reliance on technology for almost every aspect of life means that the practice of engineering is constantly evolving and the societal responsibility that the engineering team carries is increasing.

As a profession, members of the engineering team have an obligation to practice ethically, competently, and in the best interests of society and the natural environment. The NCSE is a critical element of Engineers Australia's Professional Standards Framework (PSF).

Engineers Australia was one of the earliest professional bodies in Australia—and among the first engineering organisations globally—to develop and implement nationally recognised competency standards. Since 1993, these standards have served as the foundation for defining the knowledge, technical abilities, and professional values, skills, and attributes expected of members of engineering teams.

Engineers Australia is the Australian signatory to the International Engineering Alliance (IEA) and is the Government-authorised assessing authority for Migration Skills Assessment. In these roles Engineers Australia is the custodian of competency standards for the engineering profession in Australia.

The Australian Engineering Competency Standards have been reviewed periodically (in 1998, 2004 and 2012). The latest review has given Engineers Australia the opportunity to review the 2012 Competency Standards not only in light of the revised international IEA Graduate Attributes and Professional Competencies (IEA GAPC, 2021) standards, but to strengthen the standards in Australia to meet both the requirements of a constantly changing world and the Australian context.

Reflecting the Australian context

The NCSE 2026 **builds on** Engineers Australia's previous Stage 1 and Stage 2 Competencies and the IEA GAPC by including: the concept of mindsets to make visible the tacit and previously unacknowledged approaches to an individual's engineering practice; increasing the emphasis on human-social and sociotechnical skills such as effective membership and leadership of diverse teams, sustainability, system safety, risk management and the health and safety responsibilities, valuing diversity, inclusiveness and respect, awareness of Indigenous issues; problem identification; and lifelong learning.

The NCSE 2026 reflects the competencies required of **members of the engineering team at each occupational category, embodying distinct, specialised capabilities** that contribute uniquely to engineering practice. These competencies represent differentiated yet equally valued forms of expertise, acknowledging that the capabilities of each are not encompassed within those of another.

In Australia, statutory registration occurs through states and territories regimes. Engineers Australia's competency standards are referenced as the national benchmark competency standard for engineering.

In the NCSE 2026, the term **Indigenous** is used to refer to Indigenous peoples globally, including but not limited to Aboriginal and Torres Strait Islander peoples in Australia. Engineering team members migrating to or providing services in Australia may have valuable intercultural competencies gained through qualifications and engagement with First Nations communities in countries such as Canada or Aotearoa New Zealand. Experiences, including awareness of and proactively engaging with Indigenous communities and acknowledging Indigenous cultures and requirements, can contribute to the attainment of relevant NCSE 2026 competencies. However, engineers who undertake qualifications or work in Australia are expected to develop specific understanding of Aboriginal and Torres Strait Islander cultures and perspectives as identified in the Entry-to-Practice and Independent Practice competencies.

Purpose

The NCSE serves multiple purposes for members of engineering teams across their career journey development including:

Professional Development

- Demonstrating professional standing.
- Being **applicable to all engineering disciplines** at the Entry-to-Practice level (formerly Stage 1 competencies) and for engineering **Areas of Practice (AoP)** at the Independent Practice level (formerly Stage 2 competencies).
- Defining the threshold competency standard, used in conjunction with the user guides, forming part of the requirements used for assessment of an individual's competencies evaluated at a point-in-time for the **Entry-to-Practice** career milestone for Engineers Australia membership or for migration skills assessment.

Professional Credentials

- Defining the threshold competency standard, used in conjunction with the user guide, forming part of the requirements for the assessment of an individual's competencies evaluated at a point in time for **Independent Practice** career milestone.
- The Engineers Australia Chartered credential is assessed against Independent Practice requirements.

Professional Registration

- Providing the competency base for the assessment of eligibility for Engineers Australia's voluntary registers and the Australian section of the IEA international registers.
- Informing the competency base for Engineers Australia assessment of eligibility for statutory registration in a State/Territory in Australia.
- Providing the benchmark national competency base for regulatory authorities responsible for registration/licensing of engineering professionals.

Course Design and Accreditation

- Providing an aid to the design of undergraduate and postgraduate engineering courses intended to prepare candidates for entry to practice and for the development of micro-credentials to demonstrate a specific competency.
- Defining the competency standard for use in the Engineers Australia Accreditation Management System, for the **accreditation of tertiary education programs** for Entry to Practice in Australia.
- Contributing to the globalisation and mobility of professional engineering services, when combined with the **IEA Accords** – which establish standards for engineering education and substantial equivalence of outcomes from accreditation systems, and **IEA Agreements**–which set benchmarked standards for competence for engineering practice.

Industry Standards

- Providing a reference framework for capability development in the workforce.

Formation and Continuing Professional Development

- Providing a basis for planning across career levels from Entry to Practice to Independent Practice and high value expert practice. They also provide a guide to continuing professional development for members of EA.

Structure of the NCSE

The NCSE is supported by a suite of documents related to implementing the purposes as mentioned earlier. They form part of EA's Professional Standards Framework. The NCSE should be read in conjunction with this suite of documents which includes:

Document	Description
NCSE 2026 Competency User Guides	Entry-to-Practice level – provide guidance on entry to practice competency validation for each occupational category: professional engineers, engineering technologists and engineering associates. Independent Practice level – provides guidance on independent practice competency validation for each occupational category: professional engineers, engineering technologists and engineering associates.
Glossary of Terms	A glossary of terms and definitions used in Engineers Australia Professional Standards.
NCSE 2026 Supplement on Differentiating the Occupational Categories in the Engineering Team	An overview on differentiating occupational categories (professional engineers, engineering technologists and engineering associates) in the engineering team.

The NCSE comprises two tables: Entry-to-Practice Competencies in Table 1 and Independent Practice Competencies in Table 2. The tables include **competency statements** and associated **occupational category profiles**.

The competency statements are grouped within ten **domains** which are common across a career journey.

The NCSE aligns with the IEA GAPC (IEA GAPC, 2021). The Entry-to-Practice Competencies (Table 1) align to the Graduate Attribute Profiles listed in Section 5 of the IEA GAPC. The Independent Practice Competencies (Table 2) align to the Professional Competence Profiles in Section 6 of the IEA GAPC.

Attainment of all competency statements defines the Entry-to-Practice (EtP) and Independent Practice (IP) career milestones in Australia. Members of the engineering team practise across the range of engineering problems and engineering activities (complex, broadly-defined and well-defined). For further details refer to the NCSE 2026 Supplement on Differentiating the Occupational Categories in the Engineering Team.

The content and context of the NCSE is represented in Figure 1. Reading from left to right:

- The ten NCSE domains and the Entry-to-Practice (Table 1) and Independent Practice (Table 2) competency statements reflect the context of the IEA GAPC;
- The Occupational Category profile statements for each competency reflect the Australian context;
- The Engineering mindsets are visible throughout the Occupational Category profile statements.

The following sections describe these parts of the NCSE in further detail.

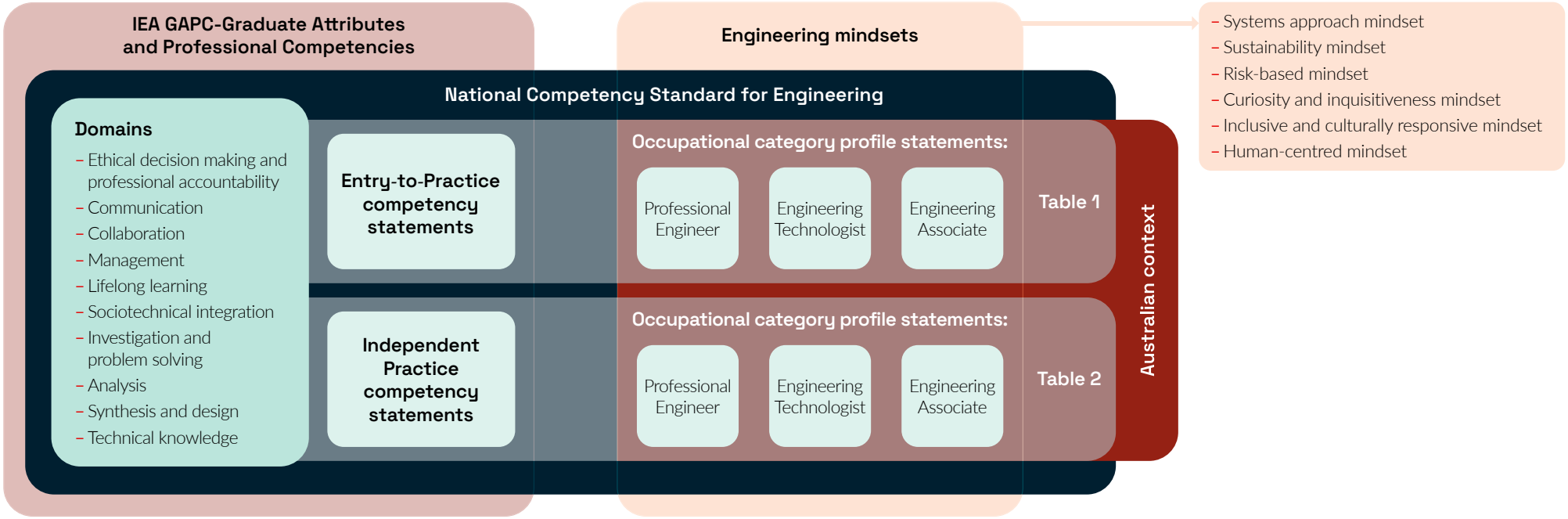

Figure 1: Context and content of the NCSE

Competency statements

Competency statements are described further as **occupational category profiles** (refer to Tables 1 and 2) at the two career milestones: **Entry to Practice** and **Independent Practice**. Occupational category profiles are differentiated for each occupational category according to the type of engineering problem or engineering activity, or are common across all occupational categories. Text in **bold** in Tables 1 and 2 identifies points of key differentiation between occupational categories.

Profile statements reveal the meaning of, and set the context for, the competency statements; they afford a view of what the competency statement means in practice.

For **Entry to Practice**, Table 1 describes outcomes from an accredited program. It includes 17 Entry-to-Practice competency statements which form part of the requirements used in the Engineers Australia Accreditation Management System (AMS) for the accreditation of tertiary education programs at Entry-to-Practice level in Australia.

The Entry-to-Practice competencies in Table 1 also form part of the requirements for applicants seeking assessment at the Entry-to-Practice career milestone for Engineers Australia membership, change occupational category, or for migration to Australia as engineering professionals. An engineering team member at the Entry-to-Practice career level requires supervision of their engineering practice.

For **Independent Practice**, Table 2 typically describes a practising engineering professional who has undertaken professional formation following graduation and demonstrated independent practice. Table 2 includes 17 Independent Practice competency statements forming part of the requirements used in the assessment of applicants for EA's Chartered credential. They also form the competency base for inclusion on the IEA International Professional Engineers (IntPE) register, the Asia-Pacific Economic Cooperation (APEC) Engineer register, International Engineering Technologist Agreement (IETA) and the Agreement for International Engineering Technicians (AIET) register. An engineering team member at the Independent Practice career level does not require detailed supervision of their engineering practice; however, their work should still be subject to normal technical assurance activities such as checking, approval, and reviews, commensurate with the technical risk associated with the type of work they are doing.

The Independent Practice competencies are built on the Entry-to-Practice competencies and professional formation through experience and further development. Applicants applying for assessment at the Independent Practice career milestone **must first be assessed as competent** for Entry to Practice.

Domains

Ten **domains** are identified, aligning closely with the IEA GAPC differentiating characteristics. They are applicable to all engineering **disciplines** or **Areas of Practice (AoP)**. Each domain includes one or more competency statements.

Engineering mindsets

Mindsets are those principles, values, beliefs and attitudes (thinking) that influence an individual's behaviour. These behaviours are observable in how an individual perceives, relates, approaches and responds (acts) to situations, challenges, setbacks, and opportunities.

The concept of mindsets has been introduced into the NCSE 2026 to show how members of the engineering team think, interpret, and engage with the world, affording a view of engineering as a socially embedded, ethically grounded, and human-centred profession.

- Competencies describe: what an engineering team member must know (e.g. technical knowledge, legislative requirements); what an engineering team member must be able to do (e.g. interpersonal skills, problem identification, analysis); and how an engineering team member behaves in action (e.g. ethical decision making, managing others, developing solutions, working collaboratively).
- Mindsets influence: how engineering team members approach problems (e.g. systems approach, risk-based mindset); how engineering team members relate to others (e.g. curiosity, inclusivity); and how engineering team members see their role and responsibility in broader contexts (e.g. sustainability, human-centred).

As mindsets encompass attitudes, cognitive frames and orientation to action, they are highly relevant to engineering judgement. Judgement often occurs under uncertainty, involves balancing competing priorities, and has a dependency on an engineering team member's principles, values, ethics and social awareness.

Six engineering mindsets are identifiable in the occupational category profile statements in the NCSE 2026 and serve to highlight the tacit and previously unacknowledged approaches evidenced within an individual's practice. The engineering mindsets include: **Systems approach mindset; Sustainability mindset; Risk-based mindset; Curiosity and inquisitiveness mindset; Inclusive and culturally responsive mindset; and Human-centred mindset**.

The engineering mindsets are described further in Table A1 of the Appendix. Table A2 shows examples of where mindsets are visible within the occupational category profile statements.

In providing evidence of attainment of the competencies through the occupational category profile statements, the mindsets can help to determine authenticity and depth in an individual's engineering practice. Mindsets are not intended to be evaluated or assessed independently.

NCSE across the career journey

Figure 2 shows how the NCSE is represented across a career journey. Reading from left to right:

- The ten NCSE domains are shown in the same order as Table 1 and Table 2.
- The Entry-to-Practice competencies (Table 1) include 17 competency statements. The Entry-to-Practice career milestone is included to represent attainment of this career level.
- The Independent Practice competencies (Table 2) include 17 competency statements. The Independent Practice career milestone is included to represent attainment of this career level.

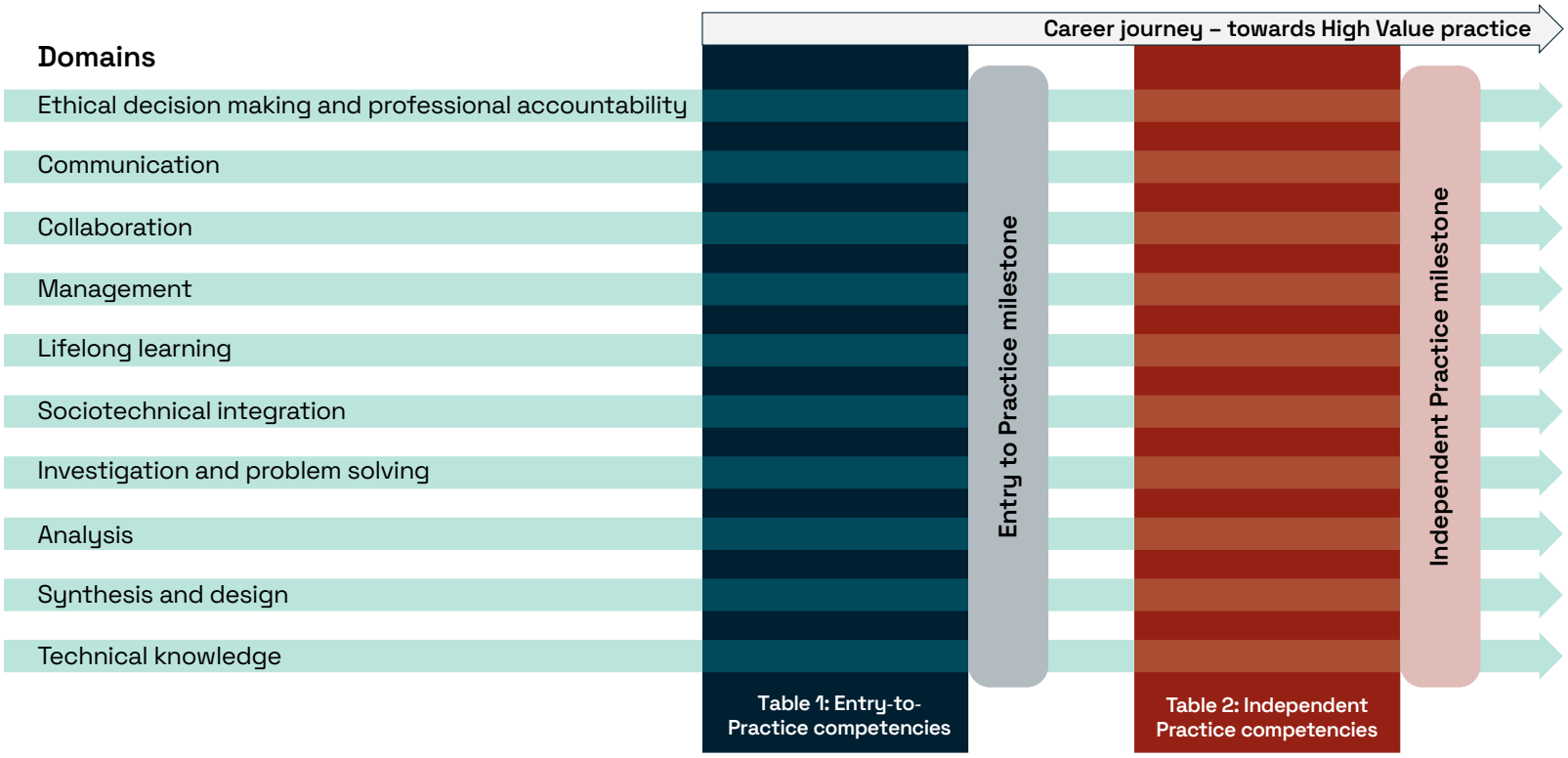

Figure 2: Diagram representing the NCSE across the career journey

The National Competency Standard for Engineering

Table 1: Entry-to-Practice Competencies

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Ethical decision making and professional accountability	ETP-ED1	Discern ethical issues that relate to the engineering team member's role within the profession, the community and society.	Appreciate the importance of personal ethical and professional responsibility and accountability. Apply the Engineers Australia Code of Ethics and Guidelines on Professional Conduct. Appreciate the importance of the need for due diligence in certification, compliance and risk management processes.		
Communication	ETP-CM1	Apply communication approaches using a range of media appropriate to and effective within a range of contexts demonstrating an understanding of others' perspectives.	Communicate effectively and inclusively on **complex** engineering activities with the engineering community and with society at large, comprehend and write reports and design documentation and deliver effective presentations. Awareness of cultural, language and learning differences. Awareness of different ways in which different communities, including Indigenous communities, engage.	Communicate effectively and inclusively on **broadly-defined** engineering activities with the engineering community and with society at large, comprehend and write reports and design documentation and deliver effective presentations. Awareness of cultural, language, and learning differences. Awareness of different ways in which different communities, including Indigenous communities, engage.	Communicate effectively and inclusively on **well-defined** engineering activities with the engineering community and with society at large, comprehend the work of others, document their own work, and give and receive clear instructions. Awareness of cultural, language, and learning differences. Awareness of different ways in which different communities, including Indigenous communities, engage.

Table 1: Entry-to-Practice Competencies continued over next 7 pages

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Collaboration	ETP-CO1	Respect and include people from diverse backgrounds, in both the practice of engineering and in the development of effective, relevant engineering solutions.	Awareness of the value of diversity—including gender, race, ethnicity, sexual orientation, socio-economic background, age, disability, and belief systems—and inclusion, ensuring that all individuals are treated equitably and with respect. Awareness of the value of inclusive and accessible design. Awareness of how to incorporate the requirements of Indigenous cultures into engineering projects.		
	ETP-CO2	Act effectively as a team member, mentor or leader.	Function effectively as a member in diverse and inclusive teams in a range of settings including in multi-, inter-, cross- and trans-disciplinary teams across professions, face-to-face, remote and distributed settings. Reflect on the contributions of others and distinguish contributions that may have been made as a result of discussions or collaborations. Mentor team members to achieve their true potential within the team environment. Proactively seek to develop teams with diverse perspectives. Participate as an active listener.		
Management	ETP-MG1	Apply engineering and project management principles and tools to manage information and projects.	Identify requisite information, and determine how to collect, process, and interpret it. Critically assess the accuracy, reliability and authenticity of information. Integrate project management approaches and tools in engineering projects. Apply knowledge of economic decision-making.		

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Lifelong learning	ETP-LL1	Conduct self-review and performance evaluation against appropriate criteria as a primary means of tracking personal development needs and achievements.	Recognise the need and have the skills for: – independent and lifelong learning; – development as a reflective practitioner; – adaptability to new and emerging technologies; and – critical thinking in the broadest context of technological change.		
	ETP-LL2	Identify knowledge of the future directions of a discipline and the value of critical thinking.	Engage with current research to **deliberate** on knowledge development and research themes within a **discipline**. Awareness of how critical thinking can be used to evaluate emerging issues. Maintain awareness, discernment and appropriate engagement with emerging directions and development within a **discipline**.	Engage with current research to **identify and critically appraise** current developments and emerging issues in an **engineering sector**. Awareness of how critical thinking can be used to evaluate emerging issues. Maintain awareness, discernment and appropriate engagement with emerging directions and development within an **engineering sector**.	Engage with current research to **develop a broad knowledge** of emerging trends and issues disseminated within an **engineering sector**. Maintain awareness, discernment and appropriate engagement with emerging directions and development within an **engineering sector**.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Sociotechnical integration	ETP-ST1	Use innovative and creative thinking and interdisciplinary knowledge.	**Look beyond** current practices. **Consider** how knowledge from other disciplines and professions can contribute to new ideas. Engage with professionals and individuals from these fields to exchange ideas. Identify and develop alternative concepts, solutions and procedures. Challenge respectfully, as appropriate, engineering practices from technical and non-technical viewpoints. **Identify and evaluate** new and emerging technological opportunities.	**Seek out** new developments in an **engineering sector**. **Be aware** of broader fields (engineering and non-engineering) from which new ideas and inferences may be drawn. Engage with professionals and individuals from these fields to exchange ideas. Challenge respectfully, as appropriate, engineering practices from technical and non-technical viewpoints. **Evaluate** alternative concepts and report on potential solutions.	**Apply** creative approaches to identify and develop alternative concepts, solutions and procedures within an **engineering sector**. **Identify** alternative solutions from within similar engineering sectors. Challenge respectfully, as appropriate, engineering practices from technical and non-technical viewpoints. **Identify** new technological opportunities.
	ETP-ST2	Apply knowledge and integrate environmental and sustainability factors in engineering design.	Apply principles of design practice relevant to the **discipline**, including efficient resource use, environmental impacts, whole-of-life cost, re-use of resources, net zero carbon and similar concepts that support engineering design and operations in a discipline.	Apply principles of design practice relevant to an **engineering sector,** including efficient resource use, environmental impacts, whole-of-life cost, re-use of resources, net zero carbon and similar concepts that support engineering design and operations.	Apply standardised knowledge of design and operation relevant to an **engineering sector**, including efficient resource use, environmental impacts, whole-of-life cost, re-use of resources, net zero carbon and similar concepts.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
	ETP-ST3	Apply knowledge of the role of engineering in society including the application of the principles of system safety, legislative, social and cultural requirements.	Identify the role of the human within the engineering system as part of the design process. Incorporate the interactions between engineering systems and people in the social, cultural, environmental, commercial, legal and political contexts within an engineering solution. Identify both the positive role of engineering activities and decisions in a **discipline** and their potential adverse impacts on stakeholders and the community including Indigenous culture. Awareness of the basis and relevance of standards and codes of practice, as well as legislative requirements applicable to the **discipline**.	Identify the role of the human within the engineering system as part of the design process. Incorporate the interactions between engineering systems and people in the social, cultural, environmental, commercial, legal and political contexts within an engineering solution. Identify both the positive role of engineering activities and decisions in an **engineering sector** and their potential adverse impacts on stakeholders and the community including Indigenous culture. Awareness of the basis and relevance of standards and codes of practice, as well as legislative requirements applicable to an **engineering sector**.	Identify the role of the human within the engineering system as part of the design process. Incorporate the interactions between engineering systems and people in the social, cultural, environmental, commercial, legal and political contexts within an engineering solution. Identify both the positive role of engineering activities and decisions in an **engineering sector** and their potential adverse impacts on stakeholders and the community including Indigenous culture. Awareness of the relevance and application of standards and codes of practice, as well as legislative requirements applicable to an **engineering sector**.
	ETP-ST4	Apply knowledge of the scope, principles, norms, accountabilities and bounds of safe and sustainable engineering practice.	Apply social, environmental and economic principles of sustainable engineering practice. Apply principles of safety engineering, risk management and the health and safety responsibilities of the **professional engineer**, including legislative requirements applicable to the **discipline**. Awareness of the UN Sustainable Development Goals, or equivalent, and their application to engineering activities.	Apply social, environmental and economic principles of sustainable engineering practice. Apply principles of safety engineering, risk management and the health and safety responsibilities of the **engineering technologist**, including legal requirements applicable to an **engineering sector**. Awareness of the UN Sustainable Development Goals, or equivalent, and their application to engineering activities.	Apply social, environmental and economic principles of sustainable engineering practice. Apply principles of safety engineering, risk management and the health and safety responsibilities of the **engineering associate**, including legal requirements applicable to an **engineering sector**. Awareness of the UN Sustainable Development Goals, or equivalent, and their application to engineering activities.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Investigation and problem solving	ETP-IPS1	Identify problems and the need for an engineering solution and apply appropriate problem-solving methodologies discerned from relevant research investigation and published information within a discipline.	For **complex** engineering problems: – Identify, discern and characterise salient issues. – Specify the problem. – Determine and analyse causes and effects. – Justify and apply appropriate simplifying assumptions. – Predict performance and behaviour. – Synthesise solution strategies and develop substantiated conclusions. Conduct investigations of **complex** engineering problems using **research methods** including research-based knowledge, design of experiments, analysis, modelling and interpretation of data, and **synthesis of information** to provide verifiable conclusions.	For **broadly-defined** engineering problems: – Identify, discern and characterise salient issues. – Specify the problem. – Determine and analyse causes and effects. – Justify and apply appropriate simplifying assumptions. – Predict performance and behaviour. – Synthesise solution strategies and develop substantiated conclusions. Conduct investigations of **broadly-defined** engineering problems – identify and select **relevant data** and models from codes, databases, and literature. **Design and conduct experiments** to provide verifiable conclusions.	For **well-defined** engineering problems: – Apply established technical and practical methods for their solution. Conduct investigations of **well-defined** problems – locate and search relevant codes and catalogues. **Conduct standard tests and measurements** to provide verifiable conclusions.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Analysis	ETP-AN1	Use discipline appropriate tools, techniques and resources to analyse engineering problems and validate outcomes of analysis.	Select and apply an appropriate technique or methodology to analyse a **complex** engineering problem within a **discipline** and **recognise** its limitations. Apply resources, and contemporary engineering and digital tools, including ideation, prediction and modelling. Validate outcomes of analysis.	Select and apply an appropriate technique or methodology to analyse a **broadly-defined** engineering problem within an **engineering sector** and **recognise** its limitations. Apply resources, and contemporary engineering and digital tools, including ideation, prediction and modelling within an **engineering sector**. Validate outcomes of analysis.	Apply appropriate technical and practical techniques, tools, and resources to analyse **well-defined** engineering problems within an **engineering sector**, with an **awareness** of the limitations. Apply resources, and contemporary engineering and digital tools, including ideation, and modelling within an **engineering sector**. Validate outcomes of analysis.
Synthesis and design	ETP-SD1	Apply systematic engineering synthesis and design processes appropriate to the discipline to conduct and manage engineering projects, develop solutions that are socially and environmentally sensitive and sustainable.	Use the results of investigation and analysis of **complex** engineering problems to design or synthesise a solution. **Identify, select** and use systematic synthesis and design processes, including design of experiments within the discipline. Address broad **contextual constraints** such as social, cultural, environmental, commercial, legal, political and human factors, as well as health, safety, sustainability and restorative imperatives as an integral part of the design process.	Use the results of investigation and analysis of **broadly-defined** engineering problems to design or synthesise a solution. **Use** systematic synthesis and design processes, including design of experiments, within an engineering sector. Accommodate **contextual factors** that impact the engineering sector, so that health, safety and sustainability imperatives are addressed as an integral part of the design process.	**Contribute** to systematic synthesis and design processes to solve **well-defined** engineering problems, including the development of experiments. Accommodate **contextual factors** that impact an engineering sector, so that health, safety and sustainability imperatives are addressed as an integral part of the design process.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Technical knowledge	ETP-TK1	Apply knowledge of the underpinning natural and physical sciences and the engineering fundamentals of a discipline, and awareness of relevant social sciences.	Apply evidence, including theory-based knowledge of the natural and physical sciences and engineering fundamentals to a **complex** problem, in a **discipline.** Apply relevant social sciences in context.	Apply evidence, including theory-based knowledge of the **relevant** natural and physical sciences and engineering fundamentals, in the **technology area** of an **engineering sector** to a **broadly-defined** problem. Apply relevant social sciences in context.	Apply science and engineering **fundamentals** to investigate and address new problems, applications procedures, practices and requirements, extrapolating from a defined and established operating context. Apply relevant social sciences in context.
	ETP-TK2	Apply knowledge of the mathematics, numerical analysis, statistics and computer and information sciences which underpin a discipline.	Apply acquired knowledge of **conceptual** mathematics, numerical analysis, statistics, and computational methods to model, analyse, and solve **complex** engineering problems. Utilise simulation, visualisation, and decision-support tools to evaluate and improve engineering solutions. Apply knowledge management and communication tools and techniques relevant to the **discipline**.	Apply acquired knowledge of mathematics, numerical analysis, statistics, and computational methods to model, analyse, and solve **broadly-defined** engineering problems. Utilise simulation, visualisation, and decision-support tools to evaluate and improve engineering solutions. Apply knowledge management and communication tools and techniques relevant to the **engineering sector**.	Apply acquired knowledge of mathematics, numerical analysis, statistics, and computational methods to model, analyse, and solve **well-defined** engineering problems. Utilise simulation, visualisation, and decision-support tools to evaluate and improve engineering solutions. Apply knowledge management and communication tools and techniques relevant to the **engineering sector.**
	ETP-TK3	Apply appropriate depth and breadth of discipline-specific knowledge.	Apply engineering knowledge from a **discipline** to develop solutions to **complex** problems.	Apply engineering knowledge from an **engineering sector** to engineering procedures and processes and develop solutions to **broadly-defined** problems.	Apply engineering knowledge from an **engineering sector** to practical procedures and practices and develop solutions to **well-defined** problems.

Table 2: Independent Practice Competencies

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Ethical decision making and professional accountability	IP-ED1	Conduct activities ethically.	Lead by example and provide guidance on ethical issues to the engineering team. Anticipate the ethical consequences of decisions, intentional action or inaction and be attuned to how these are managed collectively by your organisation, project or team. Respond appropriately to ethical issues when they arise.		
Communication	IP-CM1	Communicate effectively using a range of media.	Communicate in a variety of ways to collaborate with stakeholders. Consider the knowledge, expectations, requirements, interests, terminology and language of the intended audience and respond appropriately. Display an understanding and respect of others' perspectives within oral and written communication and by actively listening.		
Collaboration	IP-CO1	Engage proactively with relevant communities and stakeholders.	Determine stakeholders who could be affected by engineering activities or could exert influence over the engineered outcomes, including Indigenous communities. Identify stakeholders' interests, values, requirements and expectations using the terminology of the stakeholder. Collaborate with identified stakeholders through consultation and active listening. Respond to the needs and expectations of the identified stakeholders.		
	IP-CO2	Build, coordinate and lead inclusive teams.	As a member or leader, seek and value diversity and inclusion in team membership, which may include clients, coworkers, suppliers and other stakeholders. Collaborate in multi-, inter-, cross- and trans-disciplinary teams across professions. Collaborate in a range of settings, including face-to-face, remote and distributed settings.		

Table 2: Independent Practice Competencies continued over next 6 pages

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Management	IP-MG1	Take responsibility for the engineering activities and that of the team.	Accept personal responsibility for the decisions you make regarding the work that you do, lead or share. As a leader, create a safe place for people to learn and grow. Take a personal sense of responsibility for your work by: – Acknowledging your contributions and the contributions from others. – Distinguishing contributions you have made as a result of discussions or collaboration with others.		
	IP-MG2	Manage engineering activities.	**Initiate, plan, lead and manage** engineering activities. Apply appropriate formal management systems and organisational processes. Awareness of economic decision-making principles in engineering projects and activities.	**Lead and manage** part or all of one or more engineering activities. Apply appropriate formal management systems and organisational processes. Awareness of economic decision-making principles in engineering projects and activities.	**Manage** part or all of one or more engineering activities. Apply appropriate formal management systems and organisational processes. Awareness of economic decision-making principles in engineering projects and activities.
Lifelong learning	IP-LL1	As a reflective practitioner, maintain and enhance competencies and support the development of others.	Assess, acquire and apply the competencies and resources appropriate to engineering activities in your area(s) of practice. Identify and undertake appropriate CPD to enhance your ability to adapt to emerging technologies and the ever-changing nature of work. Mentor and/or teach others. Use reflective practice to inform your own development and practice as well as contribute to the benefit of the profession.		

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Sociotechnical integration	IP-ST1	Operate within an appropriate risk management system.	Apply the principles of safety engineering, risk management and the health and safety responsibilities of the **professional engineer**, including legislative requirements applicable to the area of practice. **Identify hazards, assess and manage risks** through control methods appropriate to engineering activities.	Apply the principles of safety engineering, risk management and the health and safety responsibilities of the **engineering technologist**, including legislative requirements applicable to the area of practice. **Understand and analyse** a hazard and risk framework appropriate to engineering activities.	Apply the principles of safety engineering, risk management and the health and safety responsibilities of the **engineering associate**, including legislative requirements applicable to the area of practice. **Understand and operate within** a hazard and risk framework appropriate to engineering activities.
	IP-ST2	Meet legislative, regulatory, societal and cultural requirements.	Apply the regulations, codes and other instruments which you are legally bound to apply in your work. Take professional, legislative and ethical responsibility for actions. Assess the societal, Indigenous and cultural requirements that relate to your work, and address those requirements considering others' perspectives.		
	IP-ST3	Develop safe and sustainable solutions to engineering problems and activities.	**Apply and implement** current workplace health and safety requirements, including system safety and human interaction. **Identify** system safety and human interaction issues and incorporate into solutions. **Identify** and consider the economic, social, and environmental impacts of engineering activities, and seek to achieve sustainable outcomes as represented by the UN Sustainable Development Goals (or equivalent). **Anticipate and manage** the short- and long-term effects of engineering activities. Contribute to opportunities to **develop** and apply technology for a sustainable future.	**Apply and implement** current workplace health and safety requirements, including system safety and human interaction. **Identify** system safety and human interaction issues and incorporate into solutions. **Identify** and consider the **short- and long-term** implications of engineering activities and seek to achieve sustainable outcomes as represented by the UN Sustainable Development Goals (or equivalent). Contribute to opportunities to apply technology for a sustainable future.	**Apply** current workplace health and safety requirements. **Recognise** system safety and human interaction issues and feed the information back into the decision-making process. **Recognise** the **short- and long-term** implications of engineering activities, while acknowledging the UN Sustainable Development Goals (or equivalent). Contribute to opportunities to apply technology for a sustainable future.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Investigation and problem solving	IP-IPS1	Define and investigate engineering problems within an area of practice.	For **complex** engineering problems, identify and **define** the real problem(s) and clearly articulate what needs to be solved. Through **research**, develop a thorough understanding of the influencing factors relating to the real problem(s).	For **broadly-defined** engineering problems, identify and **clarify** the real problem(s) and clearly articulate what needs to be solved. Through **information gathering**, develop a thorough understanding of the influencing factors relating to the real problem(s).	For **well-defined** engineering problems, identify and **state** the real problem(s) and clearly articulate what needs to be solved. Through **data collection**, develop a thorough understanding of the influencing factors relating to the real problem(s).
	IP-IPS2	Develop creative and innovative engineering solutions within an area of practice that are socially and environmentally sensitive and sustainable.	**Develop** creative and innovative solutions to complex, unusual and challenging problems. **Develop solutions** that meet technical, operational and business constraints. Consider social, environmental and economic issues to develop creative and innovative sustainable solutions. **Generate and support** a creative and innovative environment for your area(s) of responsibility.	**Develop** creative and innovative solutions to broadly-defined and challenging problems. **Develop solutions** that meet technical, operational and business constraints. Develop and use technological equipment skilfully, creatively and reliably, while considering social, environmental and economic issues. **Generate and support** a creative and innovative environment for your area(s) of responsibility.	Apply appropriate methods to support creative and innovative solutions to engineering problems. **Consider** technical, operational and business constraints. Consider social, environmental and economic issues to identify and use technological equipment skilfully and reliably. **Support** a creative and innovative environment for your area(s) of responsibility.
	IP-IPS3	Evaluate the outcomes and impacts of engineering activities within an area of practice.	Determine evaluation criteria for a **complex** engineering activity. Apply the evaluation criteria to evaluate the outcome and impact of the engineering activity. Document the completed evaluation.	Determine evaluation criteria for a **broadly-defined** engineering activity. Apply the evaluation criteria to evaluate the outcome and impact of the engineering activity. Report on the evaluation of the engineering activity.	Determine evaluation criteria for a **well-defined** engineering activity. Apply the evaluation criteria to evaluate the outcome and impact of the engineering activity. Report on the evaluation of the engineering activity.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Analysis	IP-AN1	Apply appropriate area-of-practice tools and processes to achieve overall engineering objectives.	Identify, justify, and competently apply tools, techniques, and processes to **complex** engineering problems. **Combine, where relevant, a range** of analytical, computational, experimental, and field methods to achieve technically sound outcomes. Integrate results from multiple tools and data sources to **make** coherent engineering decisions. Validate and verify results obtained from tools and processes. Demonstrate awareness of tool limitations, uncertainties, and assumptions, and account for them in conclusions. Maintain appropriate records.	Identify, justify, and competently apply tools, techniques, and processes to **broadly-defined** engineering problems. **Combine, where relevant, a range** of analytical, computational, experimental, and field methods to achieve technically sound outcomes. Integrate results from multiple tools and data sources to **support** coherent engineering decisions. Validate and verify results obtained from tools and processes. Demonstrate awareness of tool limitations, uncertainties, and assumptions, and account for them in conclusions. Maintain appropriate records.	Identify, justify, and competently apply tools, techniques, and processes to **well-defined** engineering problems. Validate and verify results obtained from tools and processes. Demonstrate awareness of tool limitations, uncertainties, and assumptions, and account for them in conclusions. Maintain appropriate records.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Synthesis and design	IP-SD1	Exercise sound judgement in engineering activities within an area of practice.	Make and record effective decisions through a balanced use of: – Analytical **and deductive** processes based on experience. – A **comprehensive** understanding of stakeholder needs and engineering functionality. – **Making appropriate use of incomplete data.** – Pattern recognition that comes from experience. – Acknowledging complexity. – **Reconciling alternatives suggested by competing requirements.** – Identifying variances from what is experienced.	Make and record effective decisions through a balanced use of: – Analytical **and deductive** processes based on experience. – A full understanding of stakeholder needs and engineering functionality. – **Making appropriate use of incomplete data.** – Pattern recognition that comes from experience. – Acknowledging complexity. – **Reconciling alternatives suggested by competing requirements.** – Identifying variances from what is experienced.	Make and record effective decisions through a balanced use of: – Analytical processes based on experience. – A full understanding of stakeholder needs and engineering functionality. – Pattern recognition that comes from experience. – Acknowledging complexity. – Identifying variances from what is experienced.

Domains		Competency Statement	Occupational Category profiles		
			Professional Engineer	Engineering Technologist	Engineering Associate
Technical knowledge	IP-TK1	Comprehend and apply advanced area-of-practice engineering knowledge.	Comprehend and apply **advanced** theory-based understanding of engineering principles in an area of practice, to predict the effect of engineering activities. Appropriately synthesise and **apply advanced engineering knowledge** contributed by other people including suppliers, consultants, contractors, and independent experts.	Comprehend and apply the **knowledge embodied in widely accepted procedures, processes, systems, or methodologies within an area of practice**, to engineering activities. Appropriately synthesise and **apply knowledge of technology** contributed by other people including suppliers, consultants, contractors, and independent experts.	Comprehend and apply **knowledge relevant to practices in the operational** area of practice. Appropriately synthesise and apply **established practice** contributed by other people including suppliers, consultants, contractors, and independent experts.
	IP-TK2	Comprehend and apply local engineering knowledge within an area of practice.	Acquire and apply **local engineering knowledge** within an area of practice. Where appropriate, apply engineering knowledge contributed by other people including suppliers, consultants, contractors and independent experts.	Acquire and apply **knowledge of local practices, technologies, materials and products** within an area of practice. Where appropriate, apply engineering knowledge contributed by other people including suppliers, consultants, contractors and independent experts.	Apply **knowledge of local practices, materials, products and environmental plans** within an area of practice. Where appropriate, apply engineering knowledge contributed by other people including suppliers, consultants, contractors and independent experts.

Appendix

NCSE Glossary

The following terms are – generally – specific to use in the NCSE. This glossary is included to provide a meaning in the context of the NCSE. The *Glossary of Terms* contains terms and definitions relevant to the Engineers Australia professional standards.

Awareness (adapted from IEA GAPC definition)	Awareness involves recognising the context and implications of a situation. The demonstration of awareness can be more varied than a demonstration of knowledge. When responding to a situation, acceptable demonstrations of awareness may include: – Asking the right questions – Including the assumptions made – Complying with established policies or regulatory requirements – Respecting differing views, cultures, and ways of engaging.
Engineering sectors	An engineering sector refers to the context in which engineering activity takes place. It may have a focus on a specific field of technology or service provision, applying engineering knowledge and skills to design, develop, and maintain systems, structures, products, or services.
Engineering system	Engineering system refers to the physical and non-physical elements, information and processes that combine to meet a specific need.
Local knowledge	Local engineering knowledge refers to the understanding and application of engineering principles, standards, practices, and technologies relevant to a particular engineering sector, industry or community. It encompasses knowledge of local factors – including those listed below – enabling engineers to develop effective and appropriate solutions within or for that context: – Regulations, standards, practices, technology and technical literature – Community needs, environmental conditions, materials and requirements – Business intellectual property, designs, practices and guides, problem solving approaches – Suppliers, supply chains, stakeholders and experts.

Description of Mindsets

Mindsets are described in Table A1, including a meaning and observable behaviours. Table A2 shows an example of where they are visible – and highlighted – in two occupational category profile statements.

Table A1: Description of the Engineering mindsets

Systems approach mindset	**Means:** a holistic understanding of the complex interconnectedness and interdependencies within and between systems. **Observable behaviours:** Engineering team members use this approach to understand, define, model, analyse, design, build, commission, operate and decommission. They create and add value, efficiency and deliver outcomes and anticipate unintended consequences. They pursue quality and continuous improvement opportunities.
Sustainability mindset	**Means:** awareness of the impact of our actions on the world around us. **Observable behaviours:** Engineering team members use this mindset to make decisions, take action, and solve problems with a long-term perspective that prioritises environmental, social, and economic well-being. They understand the interconnectedness of people, planet, and prosperity, commit to creating positive impact while minimising harm and challenge unsustainable norms and practices.
Risk-based mindset	**Means:** proactively anticipating and mitigating risks early and systematically throughout the engineering lifecycle. **Observable behaviours:** Engineering team members use this mindset to prioritise foresight and proactive planning over reactive measures. This includes awareness, identification, analysis, evaluation, verification, treatment, monitoring and communication of risks.
Curiosity and inquisitiveness mindset	**Means:** the initial stages of intellectually virtuous inquiry. It includes approaches such as open-mindedness, questioning, challenging, seeking improvement, thinking critically and being responsive, adaptive and resilient. **Observable behaviours:** Engineering team members use this mindset to explore new ideas and innovative solutions, question existing assumptions, and seek knowledge beyond current boundaries. Engineering team members will demonstrate proactive investigation, creative problem-solving, and engagement with emerging research and technologies.
Inclusive and culturally responsive mindset	**Means:** being grounded in principles of fairness, respect, and responsibility toward all communities and individuals. It values diversity, equity, and cultural knowledge—including Indigenous perspectives. **Observable behaviours:** Engineering team members use this mindset to engage respectfully with diverse communities and stakeholders across various dimensions (e.g., gender, ethnicity, ability, socio-economic background). They identify, collaborate with, and consider the perspectives of all relevant stakeholders, especially those from underrepresented groups.
Human-centred mindset	**Means:** being committed to social responsibility, especially in relation to the interactions between real people and a system or artifact. **Observable behaviours:** Engineering team members use this mindset to identify the requirements relating to the needs, experiences, and safety of users when specifying, designing, and producing products or processes. They use universal design approaches to produce outcomes that enhance the quality of the user experience and are genuinely usable, accessible, and meaningful to those who engage with them.

Table A2 includes two competency statements (ETP-ST3 and ETP-IPS1) and associated Occupational Category profile statements (for professional engineer) extracted from Table 1. The profile statements have coloured highlighting as an example of where engineering mindsets are visible.

These examples are not intended to be definitive; other mappings of mindsets are possible. These examples make visible the influence mindsets have on an engineering team member's competent practice. Further, highlighting some of the engineering mindsets in the profile statements does not mean that other engineering mindsets are not applicable to that domain; rather, they would be considered in addition to the requirements of the standard.

Table A2: Example mapping of mindsets in profile statements – extracts from two Entry-to-Practice competency statements

Domain	Competency statement	Occupational Category profile – Professional Engineer
Sociotechnical integration ETP-ST3	Apply knowledge of the role of engineering in society including the application of the principles of system safety, legislative, social and cultural requirements.	**Identify the role of the human within the engineering system as part of the design process.** Incorporate the **interactions between engineering systems and people in the social, cultural, environmental, commercial, legal and political contexts** within an engineering solution. **Identify both the positive role of engineering activities and decisions in a discipline** and **their potential adverse impacts** **on stakeholders and the community including Indigenous culture.** Awareness of the basis and relevance of standards and codes of practice, as well as **legislative requirements** applicable to the **discipline**.
Investigation and problem solving ETP-IPS1	Identify problems and the need for an engineering solution and apply appropriate problem-solving methodologies discerned from relevant research investigation and published information within a discipline.	For complex engineering problems: – **Identify, discern and characterise salient issues.** – **Specify the problem.** – **Determine and analyse causes and effects.** – **Justify and apply appropriate simplifying assumptions.** – **Predict performance and behaviour.** – **Synthesise solution strategies and develop substantiated conclusions.** **Conduct investigations of complex engineering problems using research methods including research-based knowledge, design of experiments,** analysis, modelling and interpretation of data, **and synthesis of information to provide** **verifiable** **conclusions.**

Colour key:

– **Systems approach mindset** – **Risk-based mindset** – **Inclusive and culturally responsive mindset**

– **Sustainability mindset** – **Curiosity and inquisitiveness mindset** – **Human-centred mindset**

ENGINEERS
AUSTRALIA