

# **CHARTERED PROFESSIONAL ENGINEER**

## **REASSESSMENT GUIDANCE**

**September 2020**





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# MAINTAINING YOUR CPENG STATUS

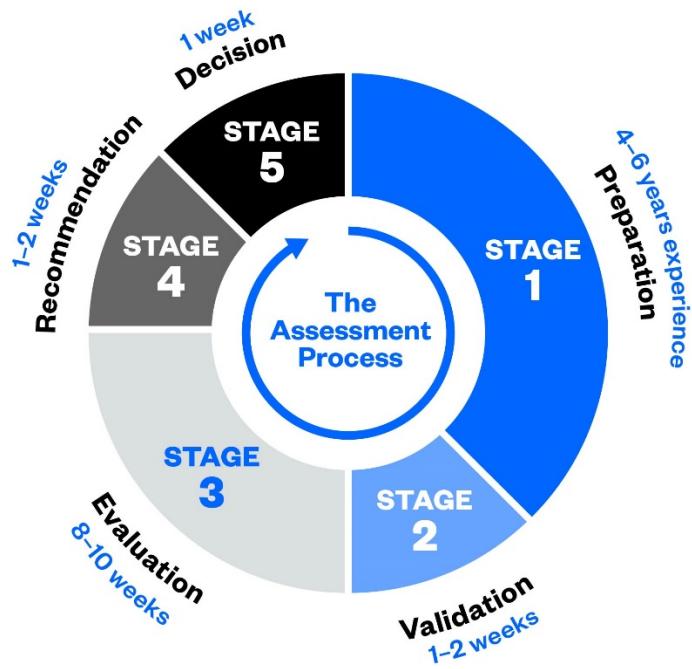
To maintain your Chartered Professional Engineer status, you need to demonstrate current competence within your area of practice. This CPEng reassessment happens at least once every six years.

The information you need to supply will be assessed against specific work and learning outcomes for competence-based assessments.

Assessors will be looking for:

- The technological, regulatory and good practice changes within your practice area since your last assessment or over the last six years, and what actions you've taken to stay up to date with these changes.
- How your work records show the complexity and application of this new knowledge to your engineering work.
- A copy of your current CV.

# OUR PROCESS



## STAGE 1: PREPARATION

Chartered Professional Engineers need to be reassessed at least once every 6 years – this is different to Chartered Membership where reassessment is not required. The easiest way to keep track of your development is to record your work and CPD in our member area online. When you're ready, complete every section of the required assessment online and make sure that your referees have completed their referee statements.

## STAGE 2: VALIDATION

When your application is complete, submit it to our team for validation. One of our Competence Assessment Advisors will look after your application from start to finish. Your advisor will check the information you've provided and will aim to give you feedback within 10 working days. They'll let you know if you need to make any changes before submitting your application.

If you do need to make changes, try to get them done as soon as possible and then resubmit for validation.

## STAGE 3: EVALUATION

Once your application is finalised, an assessment panel will be assigned to you. This is usually made up of a Lead Assessor and a Practice Area Assessor who has knowledge in an area of engineering relevant to your practice area.

They'll review your application over 8–10 weeks and as part of this may video chat or call you to discuss it as well.

The panel will use the evidence you submit and the information from your meeting with them to evaluate your application. They might also ask you to supply further evidence to support your application.

## **STAGE 4: RECOMMENDATION**

Once they've got all the information they need, the panel will make a recommendation to the Competency Assessment Board (CAB) about whether to approve your application. Your Lead Assessor will let you know their recommendation.

The CAB will consider the panel's recommendation and make a decision on your application at their monthly meeting. Occasionally the CAB asks for additional information. Your advisor will let you know if that happens.

## **STAGE 5: DECISION**

Your advisor will let you know the outcome of your application. If your registration is maintained, your name will continue to appear on our 'find an engineer' search online which is available publicly.

If your application is unsuccessful or the CAB made an alternative decision, you can respond. Your advisor will talk you through your options.

## **BEFORE YOU START**

- Make sure your work and CPD records are up to date.
- Get familiar with the assessment criteria.
- Talk to people who have been through the process before.

**Top tip:** write in the first person, e.g. 'I' or 'me'.

# **COMPLETING YOUR APPLICATION**

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## **CHARTERSHIP & PRACTICE DETAILS**

In this section you'll choose the membership and registrations you want to be assessed for, describe your practice area and select your practice field.

### **MEMBERSHIP AND REGISTRATIONS**

Based on the type of assessment and your engineering class, you'll be shown the membership and registrations you can apply for. Select Chartered Professional Engineer and an Design Verifier roles that you need for your work.

### **PRACTICE AREA**

This is the area that we'll assess your competence for. A short description helps us assign the right assessment panel to your application.

Practice area is not a full scope of your engineering practice or competence. You can practice in other areas or fields of engineering if you are undertaking work that you can complete successfully within your competence, as governed through self-regulation and your annual commitment to the Code of Ethical Conduct.

Describe the area you have engineering knowledge and skills in. Focus on your core current practice area. Keep it within 15 words. Avoid using personal pronouns such as 'I' or 'me', job titles or project names, company names, and any engineering activities that are not evidenced within your assessment.

Use the format: [Nature or actions] of/for/in [engineering knowledge or skills]. A few successful examples are:

- Design and construction monitoring of water and wastewater systems.  
OR
- Design of machines, load carrying and lifting equipment.  
OR
- Process engineering, operation and training for wastewater treatment plants.

### **PRACTICE FIELD**

Selecting your practice field will also help us assign the right assessment panel to your application. Choose the one that best aligns with your practice area. You may choose an additional field if your practice is across more than one.

*See appendix A for practice field descriptions*

# REFEREES

You need two referees to provide a recommendation on your application. They need to be current Chartered Members or Fellows or Engineering New Zealand (CMEngNZ or FEngNZ), Chartered Professional Engineers (CPEng), or equivalent.

If a referee declines your request, you'll need to provide another person.

Referees that accept your request will be asked:

- their relationship to you
- what they consider to be some of your strengths and weaknesses as an engineer
- if there is anything about your practice as an engineer that would raise concern.

Both referees need to complete the request before you can submit your application.

# SELF-ASSESSMENT

The self-assessment is where you write how you meet the competency standard. For a CPEng reassessment there is just one competency group – changes in your practice area. Your answer should be around 500 words and should not reference specific work examples – you'll do that in the evidence section.

## HOW WE DEFINE COMPLEXITY

You'll need to show you can carry out engineering work at a particular level of complexity.

Problem	Activity
<b>Chartered Member and CPEng<sup>1</sup></b>	
<b>Complex engineering problems</b> Problems that include some or all of the following: <ul style="list-style-type: none"><li>• Wide-ranging or conflicting technical, engineering, and other related issues</li><li>• No obvious solution, which means an original method of analysis is needed.</li><li>• Can't be resolved without in-depth engineering knowledge</li><li>• Issues not often experienced</li><li>• Aren't covered by the standards and codes of practice for professional engineering</li></ul>	<b>Complex engineering activities</b> Activities or projects that include some or all of the following: <ul style="list-style-type: none"><li>• Diverse resources, eg people, money, equipment, materials and technologies</li><li>• Resolving critical problems that occur when a variety of technical, engineering and other related issues interact</li><li>• New materials, techniques or processes, or the innovative use of existing materials, techniques, or processes</li></ul>

<sup>1</sup> The wording of these definitions has been slightly simplified from the original Definitions for purpose of minimum standard for registration in the Chartered Professional Engineers of New Zealand Rules (No 2) 2002. [Read them in their original form](#)

- Diverse groups of stakeholders with a wide range of needs
- Significant consequences in a range of contexts

# EVIDENCE

Attach evidence which supports your responses in the self-assessment and reflects your practice area description. You should attach two records for a CPEng reassessment.

You'll be able to choose from your existing work and CPD records, or add new ones. For each record you choose, you'll need to explain how that record supports your assessment application. Your explanation should discuss how it shows your current competence as an engineer. You should aim to write 500–750 words for each record.

You also need to attach files at this stage to your records as sample evidence. These could include drawings, project plans, calculations etc. You can upload PNG, XLSX, PDF, JPG, JPEG and SNOTE file types under 42MB.

Make sure you guide assessors on where to find evidence of this information in your attached files. This could be page numbers, sections or particular file names.

## Professional Engineer competencies

- Describe how you applied your engineering knowledge, eg engineering principles, local codes, standards or regulations, new knowledge, practices or technologies.
- Manage engineering work including how safety, sustainability and quality contribute to the final outcome. For this group you need to show evidence of complex engineering activities.
- Professional acumen that include dealing with an ethical dilemma; understanding and working within the limits of your competence; taking into account social, cultural or environmental factors; and communicating effectively with others.
- Design/develop technical solutions. For this group you need to show evidence of complex engineering problems.

# APPLICATION STATUS

**Started:** you're compiling your assessment application

**Payment pending:** awaiting payment by credit card or invoice

**Submitted:** with our team for checking and validation

**Editing:** additional information required before being passed to an assessment panel

**Assessors being assigned:** we're finding your assessment panel

**Assessment in progress:** your assessment is being reviewed by the panel

**Pending Board:** waiting for a Competency Assessment Board to be available

**Board assigned:** Competency Assessment Board has been assigned

**Complete:** outcome of assessment finalised and shared with you

**Withdrawn:** application has been withdrawn

# COMMON TERMS

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**Assessment criteria:** the standard we use to assess engineers on their competence.

**Assessment panel:** usually made up of a Lead Assessor and a Practice Area Assessor, the panel evaluates reviews your assessment application, before providing recommendations to the Competency Assessment Board.

**Chartered Assessment:** evaluates if you meet the competence standard to become Chartered, either as a Chartered Member (CMEngNZ) of Engineering New Zealand or a Chartered Professional Engineer (CPEng).

**Chartered Membership:** the Engineering New Zealand class of membership for engineering professionals who have demonstrated their engineering competence to an internationally-recognised benchmark.

**Chartered Professional Engineer (CPEng):** solves complex engineering problems and activities, which requires applying specialist engineering knowledge and first principles to their work.

**Competence Assessment Advisor:** a member of the Engineering New Zealand team assigned to your application and your main point of contact once you submit your application for validation.

**Competency Assessment Board (CAB):** the group of senior engineers that accepts or rejects recommendations made by the assessment panel.

**Complexity:** one of the key ways we differentiate between the competence registers.

**CPD record:** information about the continuing professional development activities you've done to maintain currency as an engineer.

**CPEng reassessment:** evaluates if you have maintained current competence to meet the Chartered Professional Engineer standard.

**Educational accord:** an agreement that benchmarks educational standards. If you hold an Accord-accredited qualification, you'll benefit from mutual recognition of your qualification between signatory countries.

**Engineering Professional:** deals with complex engineering problems and activities requiring the application of specialist engineering knowledge and work from first principles.

**Lead Assessor:** Chartered Engineer in charge of managing the assessment process.

**Practice area:** a combination of the area in which you hold specialised engineering knowledge and the nature of the activities you perform. These may change over the course of your career but your competence will be assessed for your current area of engineering practice.

**Practice Area Assessor:** the volunteer technical expert on your assessment panel who has knowledge in an area of engineering relevant to your own practice area/field.

**Practice field:** indicates the nature of your engineering work.

**Recognised external authorities:** overseas engineering registration authorities that are signatories of International Engineering Agreements.

**Sample evidence:** documents you include in your Work Record to provide evidence of your personal involvement in a project or activity.

**Washington Accord:** the agreement for the international recognition of engineering qualifications.

**Work record:** information about the projects or activities you've carried out in your engineering work, used in competence assessments to demonstrate the practical application of your engineering knowledge and skills.

# FREQUENTLY ASKED QUESTIONS

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## **What's the difference between Chartered Membership and Chartered Professional Engineer registration (CPEng)?**

Chartered Members belong to Engineering New Zealand and get all the perks of being part of our community. CPEng is different from membership and is a registration under the CPEng Act 2002.

CPEng is only open to professional engineers, who must demonstrate an ability to deal with complex engineering problems and activities. Chartered Membership is also available to professional engineers, but additional categories provide recognition for engineering technologists, engineering technicians and engineering geologists.

Both require a similar assessment. The competence standard for both are effectively the same, but CPEng registration requires evidence of New Zealand-specific good practice and reassessment at least once every 6 years. This makes Chartered Membership more accessible for engineers practising overseas, and provides direct entry for engineers who have been assessed in an equivalent overseas jurisdiction, eg CEng (UK) or CPEng (Australia). Chartered Membership isn't reassessed because you'll be doing ongoing professional development to stay current.

Both CPEng and Chartered Membership are underpinned by the same Code of Ethical Conduct and a fair, robust and proportionate complaints and disciplinary process.

## **How many hours of professional development activity do I need to do each year?**

You need to complete 40 hours of continuing professional development (CPD) each year to demonstrate you're actively keeping your engineering knowledge and skills up to date. For your assessment you'll need to have provided the last six years of CPD records.

## **I can't attach any documents because my work is highly confidential/the property of my employer. What should I do?**

We take confidentiality seriously and have put processes in place to protect your application.

- Engineering New Zealand assessors sign a confidentiality agreement prohibiting them from disclosing any aspect of your assessment to anyone except the relevant Practice Area Assessors, Knowledge Assessors, Competency Assessment Board members or Engineering New Zealand staff.
- We accept Work Record files that have been redacted to protect confidential information.
- You'll be given the opportunity to review who we've assigned to your assessment panel. If you have any concerns, we'll be happy to assign an alternative panel member.

## **What if I don't have any files to attach to my work records?**

Because our competence assessments are evidence-based, you need to provide files as evidence of your experience. Email correspondence can be used as evidence.

### **How many evidence files can I attach?**

Our general guidance is quality over quantity. One to four files are usually enough to provide sufficient evidence of your work. Give your assessors only the relevant information and be specific about where your evidence is in the Work Record files. For example, specify page numbers, sections, calculations, photograph titles, chart details etc.

### **When am I due to submit my CPEng reassessment? Can I extend the due date?**

You'll receive a reminder email three to six months before your CPEng reassessment is due. If you don't hear from us, get in touch and we'll confirm the date. Extensions are determined on a case by case basis, and are only available within the calendar year of your CPEng reassessment being due.

### **How much does CPEng reassessment cost?**

The fee for CPEng reassessment is included in your annual registration fee.

### **What's expected of me when I meet with the panel to discuss my application?**

The meeting is a professional conversation and is your chance to show you have a clear understanding of the work you're presenting. The Practice Area Assessor will ask you questions about the evidence you submitted in your application to verify your technical expertise. You can prepare by reviewing your application and being confident about the work you are presenting.

### **I don't have two referees that meet the criteria. Can I still apply?**

Your referees need to be current Chartered Members or Fellows or Engineering New Zealand (CMEngNZ or FEngNZ), Chartered Professional Engineers (CPEng), or equivalent. They don't have to be in your practice field. If you're struggling to find referees, try attending Engineering New Zealand events and branch meetings and start networking now.

# **APPENDIX A: PRACTICE FIELD DESCRIPTIONS**

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Engineering practice fields are loosely defined terms and are used as an indication of the nature of engineering work carried out by engineers in a certain field.

## **AEROSPACE ENGINEERING**

Aerospace engineering is the design, development, and production of aircraft (aeronautical engineering), spacecraft (astronautical engineering) and related systems. Aerospace engineers may specialise in aerodynamics, avionics, structures, control systems or propulsion systems. It may involve planning maintenance programmes, designing repairs and modifications and exercising strict safety and quality controls to ensure airworthy operations.

## **BIOENGINEERING**

Bioengineering draws heavily on the Chemical engineering discipline and involves the engineered development of raw materials to produce higher value products, using biological systems (biological catalysts). The description also encompasses the general application of engineering to biological systems to develop new products or solve problems in existing production processes. As examples, bioengineers are found in medical research, genetic science, fermentation industries and industries treating biological wastes.

## **BUILDING SERVICES**

Building Services engineering is the application of mechanical or electrical engineering principles, and an understanding of building structure, to enhance all aspects of the built environment from air conditioning and mechanical ventilation, electrical light and power, fire services (e.g. sprinklers and alarms), water and waste services, data and communications, security and access control, vertical transportation, acoustics and energy management.

## **CHEMICAL ENGINEERING**

Chemical engineering is concerned with the ways in which raw materials are changed into useful and commercial end products such as food, petrol, plastics, paints, paper, ceramics, minerals and metals. Often these processes are carried out at large scale plants. Research of raw materials and their properties, design and development of equipment and the evaluation of operating processes are all part of chemical engineering.

## **CIVIL ENGINEERING**

Civil engineering is a broad field of engineering concerned with the, design, construction, operation and maintenance of structures (buildings, bridges, dams, ports) and infrastructure assets (road, rail, water, sewerage). The Civil engineering discipline underpins several engineering fields such as Structural, Mining, Geotechnical and Transportation engineering, in which civil engineers often specialise. General Civil engineers are likely to be competent to undertake work that relates to one or more of these areas.

## ELECTRICAL ENGINEERING

Electrical engineering is the field of engineering which deals with the practical application of electricity. It deals with the aspects of planning, design, operation and maintenance of electricity generation and distribution, and use of electricity as a source of energy within major buildings, industrial processing complexes, facilities and transport systems. It includes the associated networks and the equipment involved such as switchboards, cabling, overhead lines/catenaries, earthing, control and instrumentation systems.

Areas of specialisation within the wider electrical engineering discipline, such as electronics and telecommunications are usually concerned with using electricity to transmit information rather than energy. For this reason, electronics and radiocommunications/telecommunications are captured under the field of Information engineering.

## ENGINEERING ACADEMIC

The Academic practice field is defined for engineering academic staff members from tertiary education including engineering researchers.

In tertiary education, academic staff members may be involved in engineering activities in various roles, from building engineering prototypes, to contributing to knowledge in engineering. Engineering academic staff members may not be directly involved in the engineering design process but undertaking cutting edge engineering research to lead and enhance engineering activities. Examples of work samples of engineering academic staff members may be their authored quality assurance publications in engineering disciplines, and/or their authored quality assurance engineering reports at NZQA level 7, 8, 9 or 10 (graduate or postgraduate level). Academic staff members who are teaching an engineering programme without quality assurance publications in engineering disciplines or quality assurance engineering reports, may not qualify for academic practice field.

## ENGINEERING MANAGEMENT

Engineering Management is a field of practice where engineers from any technical engineering background exercise engineering judgement in making decisions on the application and optimisation of physical, human and financial resources to achieve engineering outcomes in related processes or business activities.

Engineering Managers may not be directly involved in the engineering design process.

**General management** – where engineering knowledge is of benefit or essential and covering many engineering disciplines.

- Qualifies as Management practice field.
- Example: Chief Executive or Director of an engineering or construction company.

**Engineering management** of a multi-disciplinary team where engineering knowledge is essential but specific discipline knowledge is not essential.

- Qualifies as Management practice field.
- Example: Engineering manager of a local authority or manufacturing company. A judgement may be necessary, but err towards including the management field – the candidate is appropriate for both management and discipline fields. (*Note: an example grey area is the general manager of a lines company where electrical engineering knowledge may be essential for the role*).

**Management or leadership of a team**, however large, where the candidate must have engineering knowledge to do the job competently. This management is part of the skills and knowledge of the discipline.

- Would not normally qualify as Management practice field.
- Example: Chief structural engineer of a large consultancy or compliance authority. A judgement may be necessary but err towards including the management field if management activities are beginning to dominate – the candidate may be appropriate for both management and discipline fields.

**Part time management of a small practice or branch** of a consulting practice managing budgets and staff and clients while carrying out frontline engineering or being the responsible person signing off compliance certificates.

- Would not normally qualify for the Management practice field, as a certain amount of management is part of the engineering function, and is ‘business as usual’ for an engineer in this situation. (*Note: Grey area accepted as to the boundary between ‘business as usual’ and the management becoming dominant. As an acid test, ask “could they give up their discipline practice field?”. If not, then Management should not apply. If so, then in theory they need to go through a full review to justify the change in practice field/area description. A balanced decision may lead to having the two practice fields).*

**Full time engineering role** where the applicant claims that they “do management”, as well as advising clients, planning other workloads, training staff etc.

- Would not qualify for the Management practice field, as management is part of their normal engineering activity. This includes project management, unless it is dominant, in which case the practice field is still their engineering knowledge (discipline), and project management is written into the practice area description (ie they use their discipline skills to do project management).

## ENVIRONMENTAL ENGINEERING

Environmental engineering draws on the Civil and Chemical engineering disciplines to provide healthy water, air and land to enhance human habitation. Environmental engineers devise, implement and manage solutions to protect and restore the environment, within an overall framework of sustainable development. The role of the environmental engineer embraces all of the air, water and soil environments, and the interactions between them.

## FIRE ENGINEERING

Fire engineering draws on knowledge from the range of engineering disciplines to minimise the risk from fire to health and safety and damage to property through careful design and construction. It requires an understanding of the behaviour of fires and smoke, the behaviour of people exposed to fires and the performance of burning materials and structures, as well as the impact of fire protection systems including detection, alarm and extinguishing systems.

## GEOTECHNICAL ENGINEERING

Geotechnical engineering involves application of knowledge of earth materials in the design of structures, such as foundations, retaining walls, tunnels, dams and embankments. Geotechnical engineers assess the properties and performance of earth materials such as their stability and strength, and the impact of groundwater.

## **INDUSTRIAL ENGINEERING**

Industrial engineering is the application of mechanical and electrical engineering principles to the design and operation of production equipment, production lines and production processes for the efficient production of industrial goods. Industrial engineers understand plant and procedural design, the management of materials and energy, and human factors associated with worker integration with systems. Industrial engineers increasingly draw on specialised knowledge of robotics, mechatronics, and artificial intelligence.

## **INFORMATION ENGINEERING**

Information engineering is based on the Electrical engineering discipline but also draws heavily from Computer Science. Three areas of further specialisation can be identified:

1. **Software engineering** – the development and operation of software-intensive systems that capture, store and process data.
2. **Telecommunications engineering** – the development and operation of systems that encode, transmit and decode data via cable systems (including fibre optics) and wireless systems (radiocommunications).
3. **Electronics engineering** – the design, development and testing of electronic circuits and networks that use the electrical and electromagnetic properties of electronic components integrated circuits and microprocessors to sense, measure and control processes and systems.

## **MECHANICAL ENGINEERING**

Mechanical engineering involves the design, manufacture and maintenance of mechanical systems. Mechanical engineers work across a range of industries and are involved with the design and manufacture of a range of machines or mechanical systems, typically applying principles of hydraulics (fluid control), pneumatics (air pressure control) or thermodynamics (heat energy transfer). Mechanical engineers may specialise in the Building Services or Industrial engineering field.

## **MECHATRONICS ENGINEERING**

Integrates specialist knowledge in mechanics, electronics and computer systems to design and develop integrated automated systems, such as chassis-stabilising systems, anti-lock brakes, engine control units, disk drives, cameras, service and surgical robots and medical devices. Often these systems are largely mechanical in nature but could not function without their essential electronic and computer control system components.

## **MINING ENGINEERING**

Mining engineering involves extracting and processing minerals from the earth. This may involve investigations, design, construction and operation of mining, extraction and processing facilities.

## **PETROLEUM ENGINEERING**

Petroleum engineering is a field of engineering relating to oil and gas exploration and production. Petroleum engineers typically combine knowledge of geology and earth sciences with specialised Chemical engineering skills, but may also draw on Mechanical engineering expertise to design extraction and production methods and equipment. Petroleum engineering activities are divided into two broad categories:

1. **Upstream** – locating oil and gas beneath the earth's surface and then developing methods to bring them out of the ground.
2. **Downstream** – the design and development of plant and infrastructure for the refinement and distribution of the mixture of oil, gas and water components that are extracted.

## SOFTWARE ENGINEERING

Software engineers apply the process of analysing user needs and designing, constructing, and testing end user applications that will satisfy these needs through the use of software programming languages. A fundamental aspect is the application of engineering principals to software development. In contrast to simple programming, software engineering is used for longer and more complex software systems, which are used as critical systems for business and organisations.

## STRUCTURAL ENGINEERING

Structural engineering is a specialised field within the broader Civil engineering discipline that is concerned with the design and construction of structures. Structures might include buildings, bridges, in-ground structures, footings, frameworks and space frames, including those for motor vehicles, space vehicles, ships, aeroplanes and cranes, composed of any structural material including composites and novel materials.

## TRANSPORTATION ENGINEERING

Transportation engineering is a specialised field of practice in the civil engineering discipline relating to the movement of goods and people by road, water, rail and air.

A transportation engineer might specialise in one or more of: pavement design, asset maintenance/management, construction/project management, traffic operations and control, transportation planning and systems analysis, freight transportation and logistics, road safety, railways or public transport systems.

## WATER ENGINEERING

Water engineers specialise in water based projects; many will have a civil engineering or environmental background. Water engineers generally deal with the provision of clean water from sources or treatment plants, return of waste water and treated sewage to the environment and the handling of stormwater including the prevention of flood damage. Asset management may be a major part in a water engineer's job. This involves design, operation, maintenance and construction of infrastructure for water resources as well as planning for the maintenance and replacement of three waters assets to maintain performance and minimise whole of life costs. These can include but are not limited to pipes, treatment devices, pump stations and reservoirs.