

Fields Engineering and Technology, and Service Sector

Review of *Engineering and Technology* and *Property Consultation and Valuation* unit standards and qualifications

Unit Standards – Section 1

Field	Subfield	Domain	ID
Engineering and Technology	Civil Engineering	Civil Engineering - Asset Management	17292-17297, 17299, 17306, 17307
		Civil Engineering - Generic	11418-11421, 11423-11426, 11430
		Civil Engineering - Roading	11434-11444
		Civil Engineering - Waste Management	11427, 11428, 11431, 11433
		Infrastructure Asset Management	17300
	Civil Plant Operation and Management	Civil Plant Operation	22276, 22278, 22280
	Civil Works and Services	Civil Construction Works	20483
		Civil Project Management	6429, 6431, 6432, 11323
	Design	Graphic Design	15348
		Professional Practice in Design and Construction Consultancy	2087, 2088, 2090, 2091, 15037, 15038, 15193-15196, 17565-17567
	Engineering	Generic Engineering	11380-11384, 11403, 11404, 11407, 11410-11412, 11415, 11416, 11557, 12635, 12811
		Process and Materials Engineering	11336-11379
	Highway Construction and Maintenance	Roadmarking	15938-15940, 15942, 18044, 18051, 18052, 21421-21423, 21432
Service Sector	Property Consultation and Valuation	Property Technician	15063-15066
		Valuation Technician	15067, 15069

Qualifications – Section 2

- **National Certificate in Design (Draughting) (Level 2) [Ref: 0640]**
- **National Certificate in Design (Technician) (Level 4) [Ref: 0682]**

- **National Certificate in Engineering and Technology (for the Design and Construction Sector) (Level 4) [Ref: 0672]**
- **National Certificate in Civil Engineering – Asset Management (Operations) (Level 4)**
[Ref: 0760]
- **National Diploma in Civil Engineering – Asset Management (Strategic) (Level 7) [Ref: 0762]**
- **National Diploma in Professional Practice in Design and Construction Consultancy [Ref: 0586]**
- **National Postgraduate Certificate in Professional Practice in Design and Construction Consultancy (International Consultancy) [Ref: 0795]**
- **National Certificate in Property Consultation and Valuation (Technician) (Level 5) [Ref: 0657]**

Section 1

InfraTrain has completed the review of the unit standards and qualifications listed above.

Summary

A review was undertaken of the above unit standards as these were overdue for review. These were reviewed in conjunction with the qualifications in which they were contained.

There has been no usage of these unit standards in the last four years.

These unit standards have been confirmed by InfraTrain as no longer required by industry.

Main changes

- These unit standards have been designated as expiring.

Category D unit standards will expire at the end of December 2013

Impact on registered qualifications

Key to type of impact	
Affected	The qualification lists a reviewed classification (domain or subfield) in an elective set The qualification lists a standard that has changes to level or credits The qualification lists a C or D category standard
Not materially affected	The qualification lists a standard that has a new title The qualification lists a standard that has a new classification

The following InfraTrain qualifications are impacted by the outcome of this review and have also been designated expiring as they no longer meet the needs of industry.

Ref	Qualification Title	Classification or ID
0586	National Diploma in Professional Practice in Design and Construction Consultancy	2090, 2091, 15037, 15038, 15193, 15194, 15195, 15196, 15348
0640	National Certificate in Design (Draughting) (Level 2)	15348

0657	National Certificate in Property Consultation and Valuation (Technician) (Level 5)	15038, 15063, 15064, 15065, 15066, 15067, 15069
0760	National Certificate in Civil Engineering - Asset Management (Operations) (Level 4)	17292, 17293, 17294, 17295, 17296, 17299
0762	National Diploma in Civil Engineering - Asset Management (Strategic) (Level 7)	17300
0795	National Postgraduate Certificate in Professional Practice in Design and Construction Consultancy (International Consultancy)	17565, 17566, 17567

The following InfraTrain qualifications are impacted by the outcome of this review and are currently undergoing a review which is anticipated to be completed by 31 December 2013.

Ref	Qualification Title	Classification or ID
0567	National Diploma in Design with strands in Graphic Design, Product Design, and Spatial Design	2087, 2088, 2090, 2091
1301	National Certificate in Roadmarking (Assistant) with optional strands in Piloting, Raised Pavement Markers, Thermoplastics, and Transport	15939, 15942, 18044
1302	National Certificate in Roadmarking (Senior Operator) with strands in Long-Life Products; and Paint Marking; and with optional strands in Temporary Traffic Management on Level 2 and 3 Roads; Testing Pavement Marking; Testing Transit New Zealand T/8; and	15938, 15940, 18051, 18052
1303	National Certificate in Roadmarking (Operator) with strands in A-Type Applicator; and B-Type Applicator; and with optional strands in Raised Pavement Markers; Temporary Traffic Management on Level 2 and 3 Roads; and Transport	18044
1325	National Certificate in Civil Plant Operation with strands in Culverts and Drainage Systems, Earthworks, Road Construction, and Road Maintenance	22276, 22278, 22278, 22280
1659	National Certificate in Infrastructure Works Supervision (Level 5) with optional strands in Civil Plant Management, Civil Works, Pavement Surfacing, Roadmarking, Road Works, and Rural Contracting	18051

The following Electricity Supply Industry Training Organisation qualification is impacted by the outcome of this review which has a review date for 2014.

Ref	Qualification Title	Classification or ID
1618	National Graduate Diploma in Electricity Supply (High Voltage Line Construction and Maintenance) (Level 7)	2090, 11365, 11366, 11369, 11370, 11378

Detailed list of unit standards – classification, title, level, and credits

Key to review category	
A	Dates changed, but no other changes are made - the new version of the standard carries the same ID and a new version number
B	Changes made, but the overall outcome remains the same - the new version of the standard carries the same ID and a new version number
C	Major changes that necessitate the registration of a replacement standard with a new ID
D	Standard will expire and not be replaced

Engineering and Technology > Civil Engineering > Civil Engineering - Asset Management (Expiring)

ID	Title	Level	Credit	Review Category
17292	Identify failure points and recommend strategies for civil engineering infrastructure assets	4	12	D
17293	Explain the importance of maintenance in a civil engineering infrastructure asset network	3	3	D
17294	Demonstrate knowledge of statutory requirements on civil engineering infrastructure asset management	4	6	D
17295	Audit civil engineering infrastructure asset data collection and reporting to ensure its integrity	4	6	D
17296	Advise on use of materials for maintenance of a civil engineering infrastructure asset network	5	15	D
17297	Restore civil engineering infrastructure asset conditions	3	10	D
17299	Provide financial data to support civil engineering infrastructure asset management decisions	4	8	D
17306	Report on civil engineering infrastructure asset network performance	6	8	D
17307	Produce a work programme for a civil engineering asset network	6	10	D

Engineering and Technology > Civil Engineering > Civil Engineering - Generic (Expiring)

ID	Title	Level	Credit	Review Category
11418	Determine and describe stresses in a soil, permeability, shear strength, and settlement	4	6	D
11419	Determine slope stability and bearing capacity for shallow foundations and pile foundations	5	6	D
11420	Determine retaining wall solutions	6	5	D
11421	Identify and describe characteristics of New Zealand rocks for engineering purposes	5	7	D
11423	Demonstrate knowledge of the loading types for, and the structural mechanics of, simple structures	4	8	D
11424	Demonstrate knowledge of the structural mechanics of complex structures	6	8	D
11425	Demonstrate knowledge of factors affecting catchment management	5	4	D
11426	Design stormwater systems for public utilities	6	10	D

ID	Title	Level	Credit	Review Category
11430	Describe the powers and responsibilities of the Territorial Authority for engineering activities	5	8	D

Engineering and Technology > Civil Engineering > Civil Engineering - Roading (Expiring)

ID	Title	Level	Credit	Review Category
11434	Determine the feasibility of road location	5	8	D
11435	Develop detailed design for a road	5	8	D
11436	Design pavements	5	6	D
11437	Evaluate a roading project	6	6	D
11438	Develop road maintenance strategies	6	8	D
11439	Determine the characteristics of traffic flow	5	6	D
11440	Design intersections	5	8	D
11441	Determine human and vehicle characteristics as related to road usage	5	6	D
11442	Design traffic facilities for non-vehicle road users	6	8	D
11443	Apply traffic management techniques	6	8	D
11444	Determine requirements for ancillary services for roading	5	8	D

Engineering and Technology > Civil Engineering > Civil Engineering - Roading (Expiring)

ID	Title	Level	Credit	Review Category
11427	Design water supply facilities for public utilities	6	10	D
11428	Design wastewater systems for public utilities	6	10	D
11431	Design solid waste facilities	6	12	D
11433	Select pumping and flow equipment for a water pumping facility	6	8	D

Engineering and Technology > Civil Engineering > Infrastructure Asset Management (Expiring)

ID	Title	Level	Credit	Review Category
17300	Deliver strategic management of services based on civil engineering infrastructure assets	7	80	D

Engineering and Technology > Civil Plant Operation and Management > Civil Plant Operation (Expiring)

ID	Title	Level	Credit	Review Category
22276	Operate a suction cleaning vehicle in civil construction	3	6	D
22278	Operate a reclaimer stabiliser in civil construction	3	20	D
22280	Operate a stabilising spreader in civil construction	3	10	D

Engineering and Technology > Civil Works and Services > Civil Construction Works (Expiring)

ID	Title	Level	Credit	Review Category
20483	Demonstrate basic knowledge of fluids for horizontal directional drilling	3	3	D

Engineering and Technology > Civil Works and Services > Civil Project Management
(Expiring)

ID	Title	Level	Credit	Review Category
6429	Manage civil project construction activities undertaken by contract	6	20	D
6431	Prepare an estimate or quotation and submit tenders for civil construction work	5	12	D
6432	Instruct supervisor on civil construction contract tasks	5	10	D
11323	Report on civil construction activities	5	10	D

Engineering and Technology > Design > Graphic Design

ID	Title	Level	Credit	Review Category
15348	Demonstrate knowledge of numerical data used in the draughting industry	2	6	D

Engineering and Technology > Design > Professional Practice in Design and Construction Consultancy

ID	Title	Level	Credit	Review Category
2087	Insure design and construction projects	5	3	D
2088	Insure design and construction practices	6	3	D
2090	Control design and construction project expenditure	7	4	D
2091	Establish and maintain a design and construction clientele	6	4	D
15037	Analyse a manager's role in achieving strategic business objectives in design and construction	4	5	D
15038	Demonstrate knowledge of ethical professional practice in design and construction consultancy	4	3	D
15193	Demonstrate an understanding of enterprise collective contracts in design and construction	4	3	D
15194	Meet practice requirements for professional membership in design and construction consultancy	6	30	D
15195	Apply ethical standards to professional practice in design and construction consultancy	6	6	D
15196	Demonstrate an understanding of workplace reform in design and construction consultancy	5	6	D
17565	Provide consulting expertise for international design and construction consultancy projects	8	15	D
17566	Manage an international project in the design and construction consultancy sector	8	15	D

ID	Title	Level	Credit	Review Category
17567	Procure and plan international projects in the design and construction consultancy sector	8	15	D

Engineering and Technology > Engineering > Generic Engineering

ID	Title	Level	Credit	Review Category
11380	Manage the procurement of goods and services for engineering	6	5	D
11381	Manage engineering plant utilities and services	5	20	D
11382	Supervise the operation of engineering plant	5	10	D
11383	Plan and monitor engineering production processes	6	20	D
11384	Apply principles of environmental protection and energy conservation in engineering projects	5	15	D
11403	Complete feasibility studies for engineering projects	6	4	D
11404	Report on engineering design projects	6	4	D
11407	Demonstrate knowledge of tendering systems for an engineering project	6	3	D
11410	Administer contracts on behalf of the client for implementation of an engineering project	6	4	D
11411	Demonstrate knowledge of contractor obligations for engineering projects	5	4	D
11412	Carry out contractor obligations for an engineering project	6	6	D
11415	Demonstrate knowledge of force systems	4	3	D
11416	Analyse fluid system and components in terms of fluid mechanics principles	4	5	D
11557	Provide customer service in an engineering context	5	20	D
12635	Identify ethical engineering practice in the workplace	4	2	D
12811	Test materials used in simple and/or small scale civil engineering projects	4	6	D

Engineering and Technology > Engineering > Process and Materials Engineering

ID	Title	Level	Credit	Review Category
11336	Demonstrate knowledge of fluid statics and fluid dynamics	5	12	D
11337	Measure fluid flows	5	10	D
11338	Identify and analyse flow problems	6	8	D
11339	Describe and specify flow equipment	5	15	D
11340	Analyse and monitor heat transfer equipment performance	6	15	D
11341	Operate and maintain heat transfer equipment	6	10	D
11342	Provide data for heat exchange equipment procurement	6	8	D
11343	Perform process mass and energy balances	5	6	D

ID	Title	Level	Credit	Review Category
11344	Perform chemical reaction calculations	6	10	D
11345	Undertake conceptual process design	7	15	D
11346	Select processes and equipment to process particulate materials	6	10	D
11347	Demonstrate knowledge of properties and measurement of particulate materials	5	8	D
11348	Perform physical separation of particulate materials	6	15	D
11349	Demonstrate knowledge of fluid-particle dynamics	6	15	D
11350	Demonstrate knowledge of the principles of mass transfer	6	15	D
11351	Apply principles of mass transfer to separate materials	6	10	D
11352	Describe, identify, and specify control systems	6	15	D
11353	Identify problems in reactors and implement solutions	6	6	D
11354	Demonstrate knowledge of living systems and biomolecules	5	25	D
11355	Manipulate life forms to manufacture products	6	20	D
11356	Select and operate bioreactors	6	8	D
11357	Assay biological products	6	15	D
11358	Downstream process biological products	6	20	D
11359	Demonstrate knowledge of the New Zealand biotechnology industry	7	8	D
11360	Apply safe working practices in biohazard areas	5	6	D
11361	Demonstrate knowledge of engineering thermodynamic principles	5	6	D
11362	Demonstrate knowledge of chemical and phase equilibria	5	8	D
11363	Demonstrate knowledge of the kinetics of reactions	6	8	D
11364	Demonstrate knowledge of failure mechanisms and repair methods for engineering materials	7	8	D
11365	Demonstrate knowledge of corrosion	6	8	D
11366	Select materials for manufacturing and construction	6	10	D
11367	Identify and interpret structures of metallic, ceramic, and polymeric materials	6	8	D
11368	Demonstrate knowledge of materials joining technology	5	6	D
11369	Treat and coat surfaces	6	10	D
11370	Demonstrate knowledge of engineering materials	5	24	D
11371	Modify control programmes	6	10	D
11372	Manage process utility consumption	6	10	D
11373	Design, conduct, and report experiments and trials to improve processes	6	8	D
11374	Demonstrate knowledge of commissioning methodology	5	8	D
11375	Demonstrate knowledge of hazard identification and control	5	8	D

ID	Title	Level	Credit	Review Category
11376	Apply measures to control hazards	6	5	D
11377	Prepare plant for maintenance	6	4	D
11378	Manage the storage, handling, and transportation of materials	6	8	D
11379	Manage pollution in process waste streams	6	6	D

Engineering and Technology > Highway Construction and Maintenance > Roadmarking (Expiring)

ID	Title	Level	Credit	Review Category
15938	Apply machine extruded and screeded thermoplastic for roadmarking	3	15	D
15939	Apply hand screeded thermoplastic for roadmarking	3	15	D
15940	Apply sprayed thermoplastic for roadmarking	3	15	D
15942	Apply pre-formed thermoplastic for roadmarking	2	10	D
18044	Work safely using pilot vehicles for roadmarking on Level 2 and 3 roads	2	5	D
18051	Test roadmarkings	4	20	D
18052	Test long-life roadmarking applicators	4	25	D
21421	Describe and complete the New Zealand Roadmarkers Federation Contract Development Checklist	4	25	D
21422	Describe and complete the NZRF Competitive Pricing Procedures Tender Evaluation Checklist	4	25	D
21423	Describe and complete New Zealand Roadmarkers Federation Site Review Checklist	4	15	D
21432	Demonstrate knowledge of the New Zealand Roadmarkers Federation Line Removal Guide	3	10	D

Service Sector > Property Consultation and Valuation > Property Technician

ID	Title	Level	Credit	Review Category
15063	Inspect property, and prepare a site and floor plan	5	10	D
15064	Obtain property information	4	8	D
15065	Demonstrate knowledge of property ownership and property titles, and carry out a title search	4	8	D
15066	Collate and record property information	5	10	D

Service Sector > Property Consultation and Valuation > Valuation Technician

ID	Title	Level	Credit	Review Category
15067	Demonstrate knowledge of property valuation principles and methodologies	4	15	D
15069	Research sales and other market information, and undertake residential valuations	5	15	D

Section 2

- **National Certificate in Design (Draughting) (Level 2) [Ref: 0640]**
- **National Certificate in Design (Technician) (Level 4) [Ref: 0682]**
- **National Certificate in Engineering and Technology (for the Design and Construction Sector) (Level 4) [Ref: 0672]**
- **National Certificate in Civil Engineering – Asset Management (Operations) (Level 4)**
- **[Ref: 0760]**
- **National Diploma in Civil Engineering – Asset Management (Strategic) (Level 7) [Ref: 0762]**
- **National Diploma in Professional Practice in Design and Construction Consultancy [Ref: 0586]**
- **National Postgraduate Certificate in Professional Practice in Design and Construction Consultancy (International Consultancy) [Ref: 0795]**
- **National Certificate in Property Consultation and Valuation (Technician) (Level 5) [Ref: 0657]**

Summary of review and consultation process

A review was undertaken of the above qualifications, first registered in 1999 and 2000. With the exception of Ref: 0682 and Ref: 0762 which have not had any enrolments or completions since 2006, these qualifications have not attracted any enrolments and consequently have never been completed.

These qualifications have been confirmed by InfraTrain as no longer required by industry.

Main changes resulting from the review

The following qualifications have been designated expiring without replacement.

National Certificate in Design (Draughting) (Level 2) [Ref: 0640]
National Certificate in Design (Technician) (Level 4) [Ref: 0682]
National Certificate in Engineering and Technology (for the Design and Construction Sector) (Level 4) [Ref: 0672]
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Review category	D	See Key to Qualification Review Categories at the end of report
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Transition

The last date for assessments towards the qualifications above is 31 December 2013.

InfraTrain New Zealand is not aware of any existing candidates. However, anyone who believes they are disadvantaged by this review should contact:

InfraTrain New Zealand
PO Box 2759
Wellington 6140

Telephone 0800 486 626
Email Quality@infratrains.co.nz

Key to Qualification Review Categories

Category A The qualification is published as a new version with the same NZQF ID	Changes are made to SSB name, contact details or purpose statement
	No change is made to title, rules or components of the qualification
	No transition arrangements are required
Category B The qualification is published as a new version with the same NZQF ID	Changes are made to title, rules or components
	The new version of the qualification recognises a similar skill set to that recognised by the previous version
	The SSB is confident that people awarded the new or previous version are comparable in terms of competence
	Transition arrangements are required if candidates must gain additional/different credits for the new version
Category C A new (replacement) qualification is published with new NZQF ID	Significant changes are made to the qualification in terms of components, structure, type or level
	The SSB views people with the replacement qualification as being significantly different in terms of competence from those with the replaced qualification
	Transition arrangements are required
	Transition may be limited to phase-out dates
Category D Qualification will expire. There is no replacement qualification	Qualification is no longer required by industry
	The qualification is designated as expiring and a last date for meeting the qualification requirements is set