National Certificate in Electricity Supply (Electrical) (Level 3) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician

Level **3**

Credits **120-132**

This qualification has been **reviewed**. The last date to meet the requirements is 31 December 2020.

Transition Arrangements

The last date for entry into programmes leading to the qualification is 31 December 2019.

The last date for assessments to take place to meet the requirements of the qualification is 31 December 2020.

It is the intention of Connexis Infrastructure ITO that no existing trainee should be disadvantaged by these transition arrangements. Any person who considers they have been disadvantaged may appeal to the ITO (contact details below).

For detailed information see Review Summaries on the NZQA website.

Version 4

Changes to structure and content

- Expired standard 18027 and 19324 were removed from the Electricity Supply Electrician Strand;
- Expiring standard 19325 was removed from the Electricity Supply Electrician Strand.

NZQF National Qualification Registration Information

Process	Version	Date	Last Date for Assessment
Registration	1	June 2007	March 2009
Revision	2	October 2007	March 2009
Revision	3	February 2009	December 2020
Review	4	November 2018	December 2020

Standard Setting Body

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National Certificate in Electricity Supply (Electrical) (Level 3) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician

Level **3**

Credits **120-132**

Purpose

This national certificate is awarded to people who have demonstrated competence in the knowledge and skills required for employment in the electricity supply industry and marks an intermediate stage in the training programme for people wishing to qualify as an Electricity Supply Electrician, Electrical Fitter, or Electrical Technician. It is typically achieved in the second or third year of a three to four year training programme. This qualification incorporates twenty seven compulsory standards out of a total of sixty one standards that meet the core competencies required by the Electrical Workers Registration Board (EWRB) for electrical registration under the Electricity Act 1992.

Holders of this qualification will have accomplished a range of knowledge and skills, assessed both off-the-job (during training courses) and on-the-job (in the workplace). These include:

- knowledge of basic electrical theory, concepts, and trade practice;
- skills and knowledge related to working safely in electrical environments, including safe-working practices, and safety testing;
- some knowledge and application of relevant legislation, codes of practice, and standards;
- knowledge of the New Zealand electricity supply system;
- competence in some of the practical skills required of a fully qualified electrician;
- generic skills and knowledge related to working effectively in the electricity supply industry, such as communication skills, and report writing;
- drawing and interpreting electrical diagrams;
- knowledge of electric motors.

The strands recognise a selection of Electricity Supply Electrician competencies at levels 2 and 3, Electrical Fitter competencies, or Electrical Technician competencies required by employers in the electricity supply industry. Electricity Supply Electricians install and maintain electrical services associated with distribution networks, power stations, and substations. Electrical Fitters install and maintain electrical services associated with distribution networks and power stations, which require additional skills in mechanical construction and maintenance. Electrical Technicians install, maintain, test and commission electrical services associated with distribution networks, power stations, and substations.

This qualification can lead to the National Certificate in Electricity Supply (Electrical) (Level 4) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1295].

Replacement Information

This qualification replaced the National Certificate in Electricity Supply (Electrical) (Level 3) [Ref: 0888].

Special Notes

Prerequisites:

- Candidates wishing to be awarded this qualification with the Electricity Supply Electrician and/or the Electrical Technician Strands must also hold the National Certificate in Electricity Supply (Level 2) with the Electrical Strand [Ref: 1293], or the National Certificate in Electricity Supply (Level 2) [Ref: 0868] and the additional standards identified in the diagram at the end of this qualification.
- Candidates wishing to be awarded this qualification with the Electrical Fitter Strand must also hold the National Certificate in Electricity Supply (Level 2) with the Electrical and the Electrical Fitter Strands [Ref: 1293], or the National Certificate in Electricity Supply (Level 2) [Ref: 0868] and the additional standards identified in the diagram at the end of this qualification.
- Or demonstrate equivalent knowledge and skills.

Although the achievement of this qualification indicates competence in some of the skills of an electrician, the Electricity Act 1992 requires that all trainees are subject to supervision by a Supervisor of Electrical Work until they have registered as electricians.

Credit Range

	Compulsory	**Electricity Supply Electrician Strand**	**Electrical Fitter Strand**	**Electrical Technician Strand**
Level 2 credits	6	0-20	6	-
Level 3 credits	75	0-20	12	30
Level 4 credits	21	-	-	-
Totals	102	20	18	30
Qualification total with strand	-	122	120	132

Requirements for Award of Qualification

Award of NQF Qualifications

Credit gained for a standard may be used only once to meet the requirements of this qualification.

Unit standards and achievement standards that are equivalent in outcome are mutually exclusive for the purpose of award. The table of mutually exclusive standards is provided in section 7 of the New Zealand Qualifications Authority (NZQA) *Rules and Procedures* publications available at http://www.nzqa.govt.nz/ncea/acrp/index.html.

Reviewed standards that continue to recognise the same overall outcome are registered as new versions and retain their identification number (ID). Any version of a standard with the same Id may be used to meet qualification requirements that list the ID and/or that specify the past or current classification of the standard.

Summary of Requirements

- Compulsory standards

One of the following strands is required
- Electricity Supply Electrician Strand
- Electrical Fitter Strand
- Electrical Technician Strand

Detailed Requirements

Compulsory
The following standards are required

Engineering and Technology > Electrical Engineering > Core Electrical

ID	Title	Level	Credit
1174	Disconnect and reconnect fixed wired electrical appliances or equipment	3	4
1178	Follow safe practices in an electrical workplace	2	3
2031	Demonstrate knowledge of three-phase theory	4	4
15850	Demonstrate knowledge of single-phase transformers	3	3
15853	Demonstrate knowledge of alternating current (a.c.) theory	4	7
15854	Draw and interpret electrical diagrams	3	3
15856	Demonstrate knowledge of the New Zealand electricity supply system	3	2
15861	Demonstrate knowledge of direct current (d.c.) power supplies	3	3
16407	Use and maintain hand and power tools for electrical work	3	4

Engineering and Technology > Electrical Engineering > Electrical Appliance Servicing

ID	Title	Level	Credit
1192	Fault-find, repair, and test portable electrical tools and appliances	3	2
6705	Test electrical appliances for safety	3	3
16411	Fault-find, repair, and re-commission fixed-wired electrical appliances	3	4

Engineering and Technology > Electrical Engineering > Electrical Installation and Maintenance

ID	Title	Level	Credit
1204	Demonstrate knowledge of earthing	3	2
2016	Install earthing systems for multiple earthed neutral installations	3	3
2020	Plan and install cable support systems	3	4
15855	Demonstrate knowledge of circuit protection	3	3
15859	Demonstrate knowledge of electrical cables and accessories	3	7
15867	Install, wire, and test lights in existing installations	3	5
15868	Install, wire, and test power outlets in existing installations	3	5
15871	Demonstrate knowledge of electrical installation in damp situations	4	3
16408	Pre-wire an electrical installation	3	5
16409	Fit-off an electrical installation	3	5
16412	Fault-find, repair, and re-commission electric lighting	3	4

Engineering and Technology > Electrical Engineering > Electrical Machines

ID	Title	Level	Credit
1184	Test, and locate and diagnose faults in electrical machine windings	3	2
15858	Demonstrate knowledge of a.c. motors	4	7

Engineering and Technology > Electrical Engineering > Electrical Standards and Statutes

ID	Title	Level	Credit
15860	Demonstrate knowledge of legislation and standards governing the work of electricians	3	2

Humanities > Communication Skills > Writing

ID	Title	Level	Credit
3492	Write a short report	2	3

Electricity Supply Electrician Strand
A minimum of 20 credits at Level 2 to Level 3

Engineering and Technology > Electricity Supply > Electricity Supply - Core Skills

ID	Title	Level	Credit
10509	Climb and work on electricity network structures	3	6
12296	Apply earths to and remove earths from electrical conductors, plant and equipment	3	2
12387	Operate electrical switchgear	3	3
12390	Demonstrate knowledge of electricity supply systems	3	5
12392	Demonstrate knowledge of principles of electricity generation prime movers	3	5
17025	Carry out a rescue from an electrical structure	3	2
17027	Demonstrate the requirements for holding access permits on high voltage electrical lines	3	2
17028	Demonstrate the requirements for holding permits on high voltage electrical equipment	3	2
18028	Demonstrate knowledge of earthing in high voltage (HV) electricity network installations and works	3	2
18272	Operate power-operated elevating work platforms (EWP) in a electricity supply environment	3	5
18273	Demonstrate knowledge of the basic composition and properties of electricity	2	5
18276	Operate light lifting and rigging equipment in the electricity supply environment	2	2
18277	Demonstrate knowledge of the requirements for holding permits in the electricity supply industry	3	2
19323	Demonstrate knowledge of single and three phase transformers used in the electricity supply industry	3	2
19950	Use test instruments and carry out electrical testing in the electricity supply industry	3	3
20091	Read and interpret single line diagrams in the electricity supply industry	3	3
20092	Demonstrate knowledge of electricity transmission and distribution plant and equipment	2	4
20421	Demonstrate knowledge of earthing in the electricity supply industry	3	5
20618	Demonstrate knowledge of switching in the electricity supply industry	2	2
23897	Demonstrate knowledge of power transformer theory for electricity supply	2	3

ID	Title	Level	Credit
23898	Carry out polarity and phasing on LV electricity networks	3	2

Field	Subfield	Domain
Engineering and Technology	Electricity Supply	Electricity Supply - Distribution Networks
		Electricity Supply - Power System Maintenance
		Electricity Supply - Testing

Electrical Fitter Strand
The following standards are required

Engineering and Technology > Mechanical Engineering > Engineering - Materials

ID	Title	Level	Credit
20799	Demonstrate basic knowledge of engineering metals	2	4
20917	Demonstrate basic knowledge of engineering materials	2	2

Engineering and Technology > Mechanical Engineering > Welding

ID	Title	Level	Credit
2678	Join metals with the oxyacetylene welding process	3	6
2682	Weld steel to a general purpose industry standard with the manual metal arc welding process	3	6

Electrical Technician Strand
The following standards are required

Engineering and Technology > Electricity Supply > Electricity Supply - Core Skills

ID	Title	Level	Credit
12296	Apply earths to and remove earths from electrical conductors, plant and equipment	3	2
17028	Demonstrate the requirements for holding permits on high voltage electrical equipment	3	2

Engineering and Technology > Electricity Supply > Electricity Supply - Power System Maintenance

ID	Title	Level	Credit
14700	Apply and remove safety measures in an electricity supply environment	3	3

Engineering and Technology > Electricity Supply > Electricity Supply - Testing

ID	Title	Level	Credit
14274	Carry out electrical tests on other high voltage bus connected equipment	3	4
14275	Carry out tests on earth mat (grid) and equipment bonding systems	3	3
14276	Carry out tests on high voltage power cables	3	4
14285	Carry out tests on ancillary service (AC and DC) and uninterrupted power supply supplies	3	4
14287	Use and maintain test instruments used within the high voltage electrical industry	3	4
14288	Carry out tests on battery banks and charge systems	3	4

Transition Arrangements

Version 3

Version 3 was issued following a revision to change the structure of the qualification so that candidates who have been awarded the National Certificate in Electricity Supply (Level 2) with optional strands in Electrical, Electrical Fitter, and Line Mechanic [Ref: 1293] would not automatically fulfil the requirements for version 2 of this qualification with the Electricity Supply Electrician Strand. The Electricity Supply – Core Skills domain was removed from the Electricity Supply Electrician Strand and replaced by specific standards from the domain.

Changes to structure and content

- Electricity Supply – Core Skills domain removed from the Electricity Supply Electrician Strand.
- Standards 10509, 12296, 12387, 12390, 12392, 17025, 17027, 17028, 18027, 18028, 18272, 18273, 18276, 18277, 19323, 19324, 19325, 19950, 20091, 20092, 20421, 20618, 23897, and 23898 added to the Electricity Supply Electrician Strand.

For detailed information see Review Summaries on the NZQA website.

From March 2009 all training programmes and courses will lead to the award of version 3 of the qualification. All new trainees will be enrolled in programmes leading to version 3. People currently enrolled in programmes leading to the award of version 1 of this qualification may complete that version or transfer their results to version 3. People currently enrolled in programmes leading to the award of version 2 of this qualification MUST transfer their results to version 3.

This qualification contains standards that replace earlier standards. For the purposes of this qualification, people who have gained credit for the expiring standards are exempt from the requirement to gain credit for the replacement standards – see table below.

Credit for	Exempt from
1175, 5914	16407

Credit for	Exempt from
4795	20917
4796	20799

Previous versions of the qualification

Version 2 was issued in order to add the Electricity Supply – Core Skills domain to the Electricity Supply Electrician Strand. No other changes were made to the qualification.

Version 1 of this qualification replaced the National Certificate in Electricity Supply (Electrical) (Level 3) [Ref: 0888].

Differences between the qualifications included: total credits required for the new qualification have been changed from 131 to 120-132 dependent on strand; elective strands have been added for Electricity Supply Electrician, Electrical Fitter, and Electrical Technician; standards 2397, 2399, 2400, 2670, 2683, 2824, 4437, and 4438 were not required in the new qualification; standard 1205 has been moved to the compulsory section of the new National Certificate in Electricity Supply (Electrical) (Level 4) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1295]; standards 2678, 20799, and 20917 have been moved to the Electrical Fitter Strand; standards 2406 and 2409 have been moved to the Electrical Fitter Strand in the new National Certificate in Electricity Supply (Electrical) (Level 4) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1295]; standards 750, 15843, 15844, 15845, 15846, 15847, and 15849 have been moved to the Electrical Strand in the new National Certificate in Electricity Supply (Level 2) with optional strands in Electrical, Electrical Fitter, and Line Mechanic [Ref: 1293], and additional entry requirements are specified in the diagram at the end of this qualification for those candidates who hold the National Certificate in Electricity Supply (Level 2) [Ref: 0868].

People currently working towards versions 1-3 of the (replaced) National Certificate in Electricity Supply (Electrical) (Level 3) [Ref: 0888] may either complete that qualification or transfer their existing achievements to the National Certificate in Electricity Supply (Electrical) (Level 3) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1294]. Those transferring will be required to complete the requirements of one of the strands in the replacement qualification, and ensure they have met the requirements of the Electrical Optional Strand of the National Certificate in Electricity Supply (Level 2) with optional strands in Electrical, Electrical Fitter, and Line Mechanic [Ref: 1293]. If they select the Electrical Fitter Strand of the replacement qualification they must also have completed the requirements of the level 2 Electrical Fitter Strand in addition to the level 2 Electrical Strand, as detailed in the diagram at the end of this document.

All trainees holding the National Certificate in Electricity Supply (Level 2) [Ref: 0868] and wishing to enrol in programmes leading to award of this qualification must satisfy the entry conditions as detailed in the diagram at the end of this document.

The last date for assessments to take place for the replaced qualification is 31 December 2009. Industry will continue to recognise the former qualification, and there should be no need to ‘upgrade’ by those who have already achieved it.

It is not intended that anyone be disadvantaged by this review, and the above arrangements have been designed for a smooth transition. However, anyone who feels they have been disadvantaged may appeal to the Connexis Infrastructure ITO at the address below.

Planned Review

Any person or organisation may contribute to the review of this qualification by sending feedback to the standard setting body at the above address.

Next Review	N/A

Other standard setting bodies whose standards are included in the qualification

Competenz
ElectroTechnology Industry Training Organisation
NZQA

Certification

This certificate will display the logos of NZQA, the Connexis Infrastructure ITO and the accredited organisation.

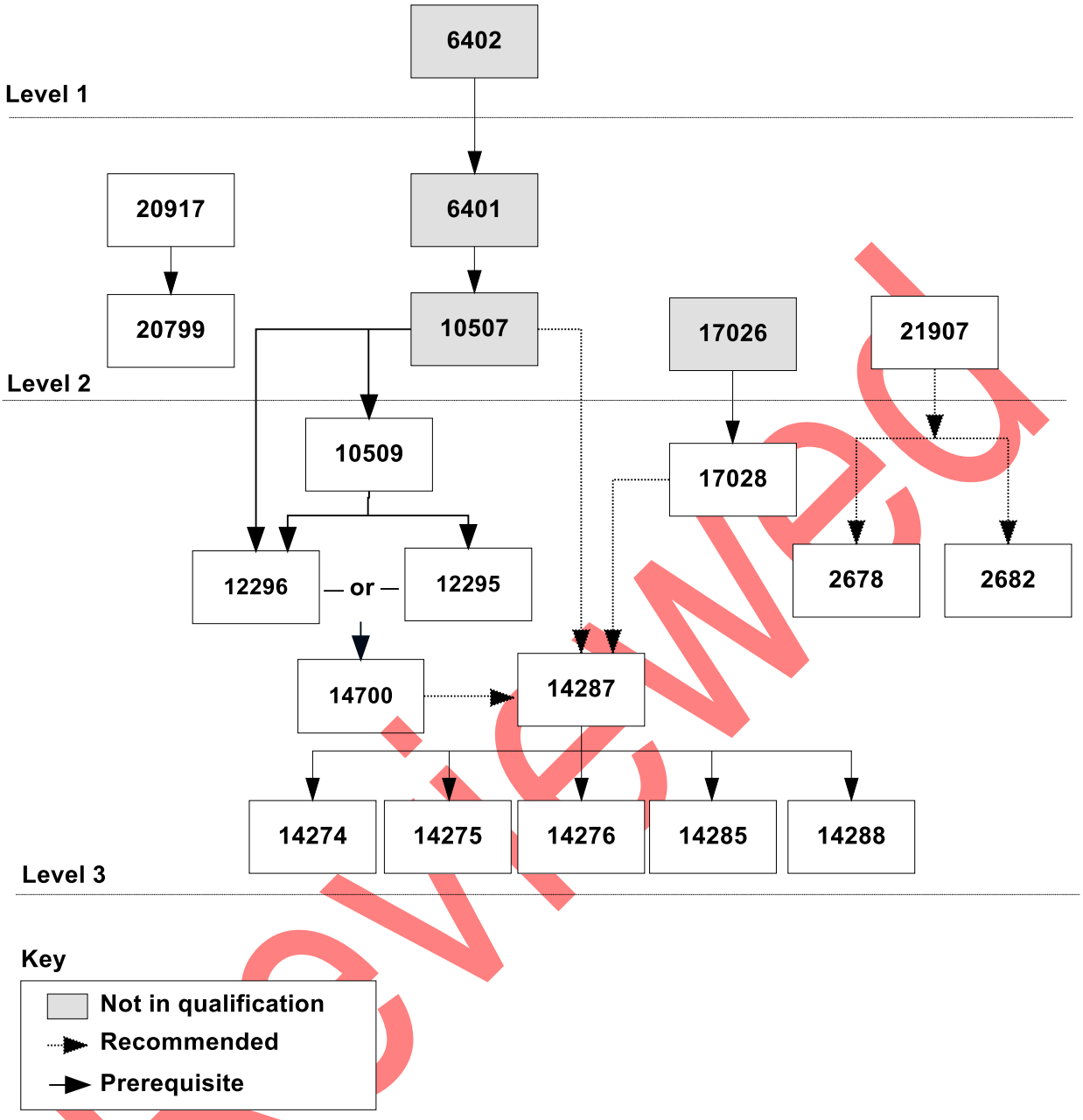
Classification

This qualification is classified according to the NQF classification system and the New Zealand Standard Classification of Education (NZSCED) system as specified below.

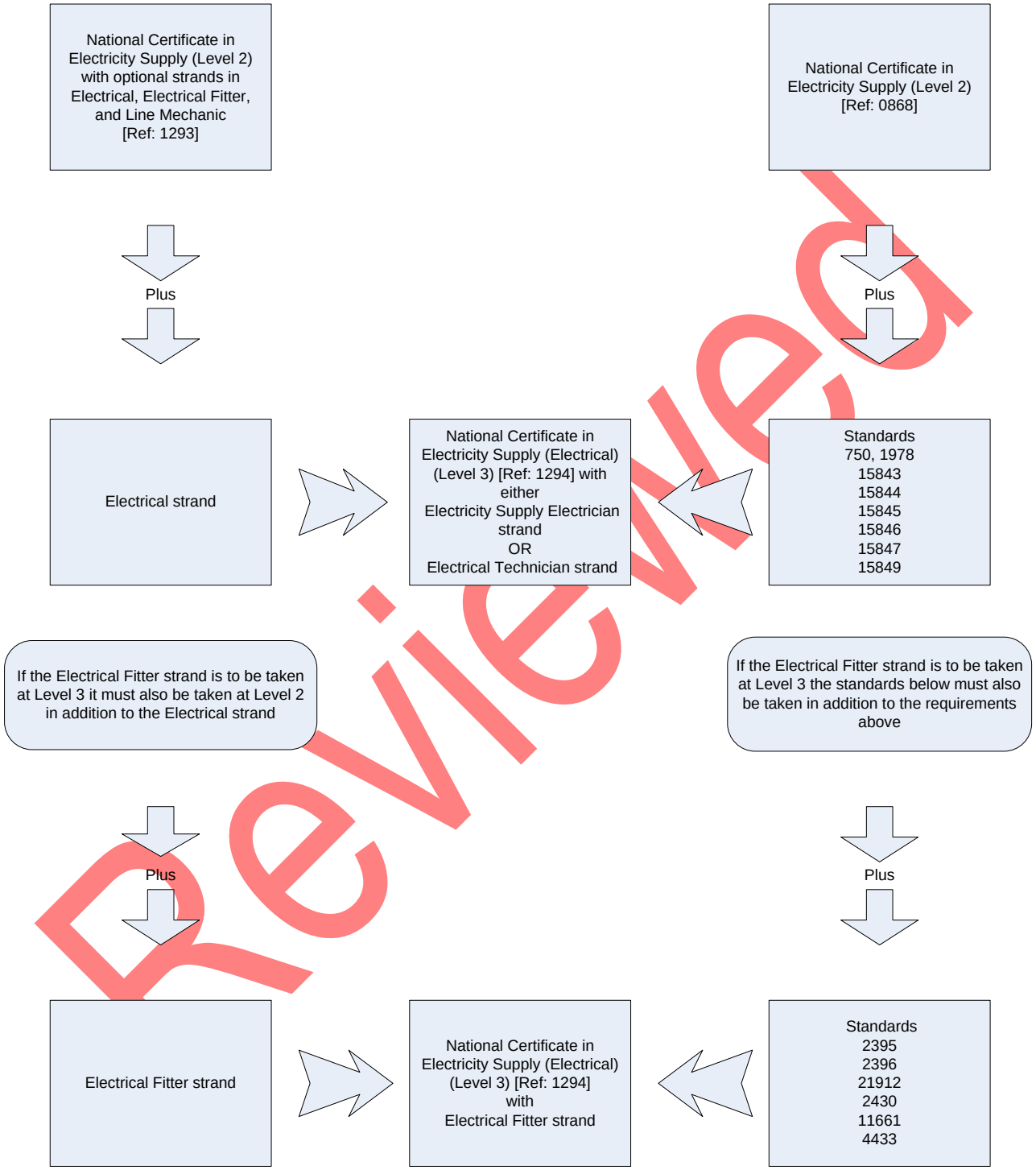
DAS Classification		**NZSCED**	
Code	**Description**	**Code**	**Description**
318	Engineering and Technology > Electricity Supply	031313	Engineering and Related Technologies > Electrical and Electronic Engineering and Technology > Electrical Fitting, Electrical Mechanics

Quality Management Systems
Providers and Industry Training Organisations must be accredited by a recognised Quality Assurance Body before they can register credits from assessment against standards. Accredited providers and Industry Training Organisations assessing against standards must engage with the moderation system that applies to those standards. Accreditation requirements and the moderation system are outlined in the associated Accreditation and Moderation Action Plan (AMAP) for each standard.

Prerequisite Diagram



Entry pathways into National Certificate in Electricity Supply (Electrical) (Level 3) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1294] Version 3



Candidates working towards the National Certificate in Electricity Supply (Electrical) (Level 3) [Ref: 0888] who wish to transfer to the National Certificate in Electricity Supply (Electrical) (Level 3) with strands in Electricity Supply Electrician, Electrical Fitter, and Electrical Technician [Ref: 1294] Version 3 will need to complete, or have completed the following: