



# STRATEGIC TRAINING PLAN FOR THE TELECOMMUNICATIONS INDUSTRY

2009-2011

ETITO

2008 Version



# STRATEGIC TRAINING PLAN

## STRATEGIC TRAINING PLAN FOR THE TELECOMMUNICATIONS INDUSTRY 2009-2011

### FOREWORD

ETITO is committed to providing relevant high quality products and services to meet the current and future skill needs of our industries. To this end, strategic training plans are developed to consider the design and maintenance of services, and qualifications and qualification pathways that meet industry requirements.

Strategic training plans are public documents and contribute to the following of ETITO's activities, systems and processes:

- ETITO investment plan
- ETITO activity plans
- ETITO qualification development and review processes
- ETITO quality assurance systems
- ETITO industry training services
- ETITO's contribution to Institute of Technology and Polytechnic [ITP] regional plans

The data that contributed to this report was collected from the following sources:

- Department of Labour
- Statistics New Zealand
- Consultation with the telecommunications industry and industry stakeholders

Further detail about the processes used to consult with the telecommunications industry can be found in Appendix 1.

**Comments about the content of this strategic training plan [STP] are welcome and will be considered when next year's STP is developed. Please email any comments to: [r&dadministrator@etito.co.nz](mailto:r&dadministrator@etito.co.nz)**

# STRATEGIC TRAINING PLAN

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A glossary of the technical terms used in this report can be found in Appendix 6.

## 1. PERCEIVED BENEFITS OF TRAINING

A group of six members of a focus group for the telecommunications industry ranked a list of ten benefits of training in the order of their importance.

The three most highly ranked benefits were:

- Training increases employees' productivity
- Training increases the quality of employees' work
- Training reduces wasted time and materials

This group valued training because it increases the quantity and quality of employees' work.

Table 2 in Appendix 2 shows the full list of benefits of training in order of their perceived importance.

## 2. REGIONAL CONCENTRATION OF TELECOMMUNICATIONS INDUSTRY

Table 1 shows the relative importance of regions of New Zealand to the telecommunications industry in terms of numbers of employees in each region. This table is based on information included in Appendix 3 about industry trends from 2000 to 2006.

**Table 1: Relative importance of regions to the telecommunications industry**

Key regions	Other significant regions	Marginal regions
Auckland	Bay of Plenty	Gisborne
Canterbury	Hawkes Bay	Marlborough
Waikato	Manawatu-Wanganui	Nelson
Wellington	Otago	Northland
		Southland
		Taranaki
		West Coast

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## 3. DEMAND FOR SKILLED LABOUR

Data collected from the Department of Labour and from consultation with the telecommunications industry led to the following conclusions. Further detail can be found in Appendix 4.

### 3.1 QUALIFICATIONS AND RELEVANT OCCUPATIONS

The following qualifications were described as relevant to the occupations listed below them by a focus group of six telecommunications industry representatives:

- National Certificate in Telecommunications [Level 2]
  - Telecommunications Technician
  - Technical Representative
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
  - Telecommunications Technician
  - Technical Representative
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
  - Computer Support Technician
- National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio
  - Telecommunications Technician
  - Technical Representative
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
- National Certificate in Telecommunications [Sales and Service] [Level 3] with strands in Sales and Support
  - Telecommunications Technician
  - Computer Applications Engineer
  - Sales Representative
- National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Mechanical, and Radio
  - Network Designer
- National Diploma in Engineering [Electrotechnology] [Level 6]
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
  - Design Engineer
- There is no qualification for a Telecommunications Draftsman. A case for meeting the skill needs with existing unit standards or for developing a national qualification needs exploration

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## 3.2 CURRENT SKILLS NEEDS

- There are currently skill shortages within the telecommunications industry, especially for the occupations Telecommunications Technician and Electronic and Telecommunications Engineer
- Local loop unbundling has increased the demand for skilled labour as this has required upgrades to telecommunications networks. Overseas labour has tended to be used to complete this work
- Nationally, there may be around 1400 potential trainees within the telecommunications industry who could benefit from further training. Around half of these may be from the Telecommunications Representative job role

## 3.3 FUTURE SKILLS NEEDS

- The following future events will increase pressure on the labour market for telecommunications:
  - Telecom's transformation to next-generation networks which will suit, for example, broadband technology
  - Provision of alternative networks to those of Telecom
  - Upgrade and installation of new cabinets with broadband equipment
  - Activity from utility companies building private fibre networks for local councils
  - New network operators
  - The aging workforce

It is unlikely that demand for labour resource will decrease when these future events have concluded, because updating of telecommunications technologies occurs constantly

- Different skill sets may be needed by the telecommunications industry in the future. These relate to:
  - Increased importance of ICT
  - Increased use of radio based systems
  - Increased electrical work relating to telecommunications systems
  - Increased requirement for high quality network jointing skills
  - Integration of voice and data networks
  - Increased complexity of home automation and entertainment systems
  - Diagnosis of faults and replacement of equipment instead of repair

## 4. SUPPLY OF SKILLED LABOUR

Data collected from the Department of Labour and consultation with the telecommunications industry led to the following conclusions. Further detail can be found in Appendix 5.

### 4.1 SOLUTIONS TO SKILL SHORTAGES

- Solutions to skill shortages might include the following:
  - Training apprentices for the future
  - Marketing the telecommunications industry to appeal to potential trainees

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- Recruiting from overseas
  - Encouraging those from less represented demographic groups into telecommunications training. For example, the Asian population is currently the fastest growing ethnic group in New Zealand and could provide a suitable talent pool for development. Women returning to the workforce may also be a suitable group to target
- There are an estimated 1400 employees nationally within the telecommunications industry who could benefit from undertaking training

## 4.2 TRAINING PROVISION

- Flexible qualification provision is a priority for the telecommunications industry rather than an increase in the number of physical locations for training. This includes distance and online workplace learning support and assessment systems
- The National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio is only currently provided by Transfield, with workplace assessment provided by DJC and Associates Ltd

## 5. QUALIFICATION ISSUES

Data collected from consultation with the telecommunications industry led to the following conclusions.

### 5.1 QUALIFICATION PATHWAY ISSUES

Figure 1 shows a suggested pathway for the telecommunications industry. This incorporates suggestions from the 2007 version strategic training plan as well as this 2008 version.

- Establish a common electrotechnology and telecommunications qualification at Level 2
- Simplify the qualification pathway – unused qualifications to be removed from the NQF after checks with stakeholders
- Some content of the following qualifications has relevance to occupations within the telecommunications industry:
  - National Certificate in Telecommunications [Planning and Design] with strands in Computer, Electronics, Mechanical, and Radio
  - National Certificate in Telecommunications [Sales and Service] with strands in Sales and Support

These qualifications also require review and possible amalgamation with current qualifications

- The following qualifications are not relevant to occupations within the telecommunications industry, and have had diminishing numbers of verifications

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over the past five years. Any still relevant unit standards from these qualifications could be amalgamated into current qualifications:

- National Certificate in Telecommunications [Maintenance and Repair] [Level 4] with strands in Computer, Electronic, Mechanical and Radio
- National Certificate in Telecommunications [Management and Operations] [Level 4] with strands in Computer, Electronics, Mechanical and Radio
- The following qualifications are not relevant to occupations within the telecommunications industry, and have not had any completions or verifications over the past 5 years. These qualifications could therefore be considered for removal from the NQF after the issues shown in Figure 1 are considered:
  - National Certificate in Telecommunications [Manufacture and Production] [Level 3]
  - National Certificate in Telecommunications [Manufacture and Production] [Level 5] with strands in Electronics, Mechanical, and Radio
  - National Certificate in Telecommunications [Research and Design] [Level 6] with strands in Electronics, Radio, Mechanical, and Software
- The following issue, which was described in the 2007 strategic training plan, was **not** considered to be a priority for those consulted in 2008:
  - Development of a Level 5 management-type qualification

This is because there are already many management-type qualifications in existence which would be suitable for telecommunications industry employees.

## 5.2 QUALIFICATION CONTENT ISSUES

- A Limited Credit Programme [LCP] or unit standards for electrical registration included in telecommunications qualifications would enable the electrical aspects of telecommunications work to be undertaken by telecommunications technicians
- An off-job unit standard specifically for customer premises equipment installers would enable the more complex training requirements of modern customer premises equipment to be met. This standard could retain appropriate content from the current bearer and switch unit standard, and be developed for the Customer Premises Equipment strand of the Level 3 qualification
- Review unit standards and qualification size. For example:
  - The Level 2 telecommunications qualification is larger than the Level 2 electrical engineering qualification
  - The unit standard 17397 “Demonstrate knowledge of basic concepts of Telecommunications” is in both Levels 2 and 3 telecommunications qualifications
  - There is a lot of theory in the Level 2 telecommunications qualification and less in the Level 3. Should this be more evenly distributed?

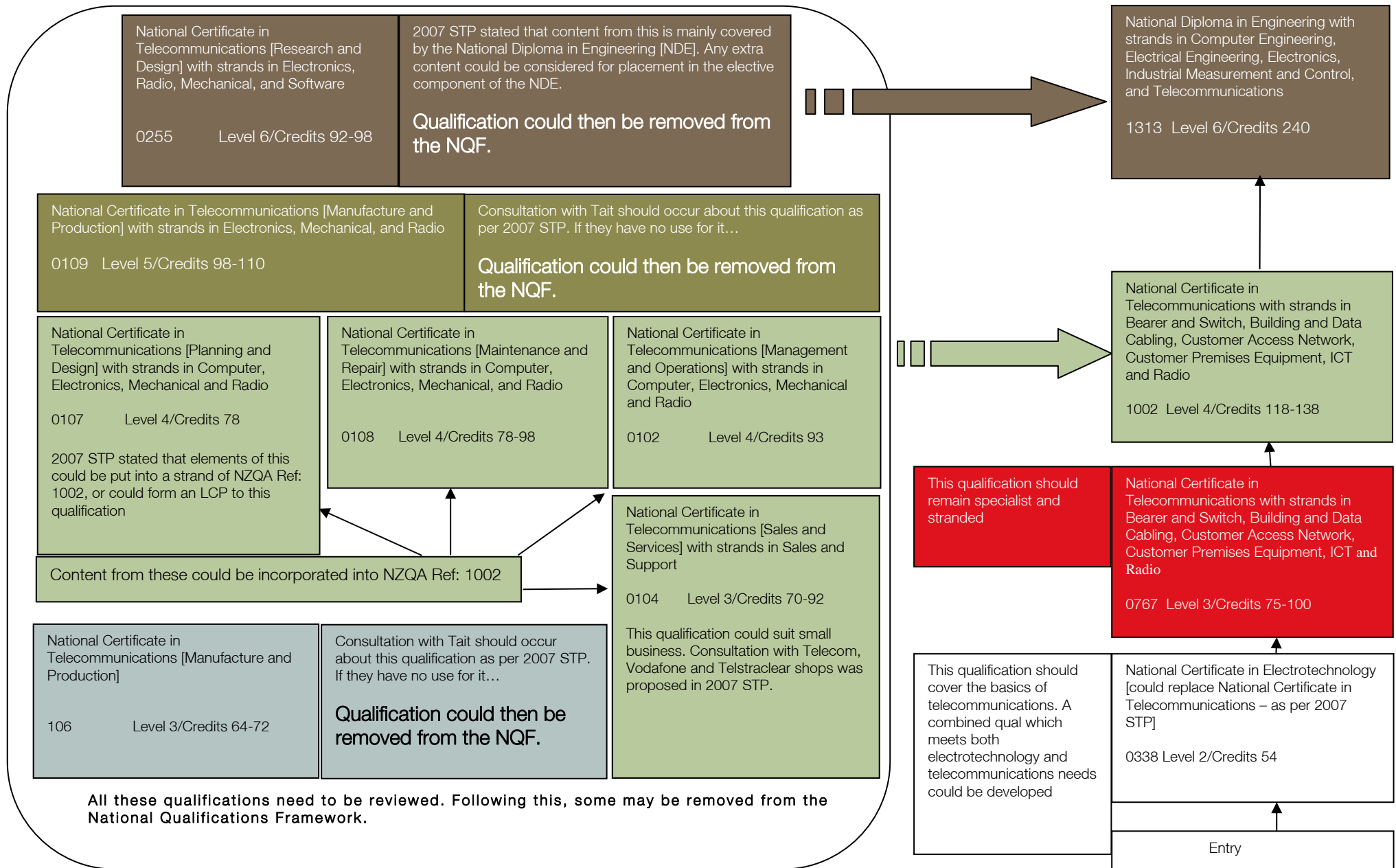
## STRATEGIC TRAINING PLAN

- The content of existing unit standards needs to be kept up-to-date, for example some standards refer to 'emerging' technologies that are no longer emerging, or refer to obsolete technologies
- Reflect in qualifications the diversity of sectors that exist within the telecommunications industry and the possible merging of the telecommunications and electronic security industry

**The following industry requirement, which was described in the 2007 strategic training plan, has been completed:**

- Include ICT coverage in higher level telecommunications qualifications

Figure 1: Suggested future telecommunications pathway



Parts of the pathway that should be considered together are shaded the same colour.

# DRAFT STRATEGIC TRAINING PLAN

## 5.3 SPECIFIC TECHNOLOGY ISSUES

The following types of technology were described as likely to have an impact on the future training needs of industry:

- **Audio-video technology** [this includes satellite technology]  
This will most likely affect the Level 3 Customer Premises Equipment Strand
- **Wireless internet**  
This will most likely affect the Level 3 and 4 ICT, and possibly Radio, strands
- **Radio communication**  
This will most likely affect the Levels 3 and 4 Radio strands
- **WI-MAX**  
This will most likely affect the Levels 3 and 4 Radio and ICT strands
- **Rigging and climbing**  
By the start of 2009 this will be included in the Level 3 qualification in a new strand covering Rigging
- 'Voice Over Internet Protocol,' which was also raised as an aspect of technology likely to have an impact on the future training needs of industry in the 2007 strategic training plan has now been covered by the ICT strands in the Levels 3 and 4 telecommunications qualifications.

## 5.4 OTHER INDUSTRY ISSUES

Other issues to consider in qualification design are:

- Industry is working towards regulation
- Innovation should be reflected in unit standards

The following issue, which was described in the 2007 strategic training plan, was considered relevant to the telecommunications industry, but not necessarily a priority:

- Address literacy and numeracy issues

## 6. MARKETING ISSUES

The following marketing issues were considered priorities by the consultation group:

- Brand qualifications with tags such as 'Trade'
- Market the positive aspects of telecommunications qualifications to school leavers and parents
- Encourage those from less represented demographic groups into telecommunications training. For example, the Asian population is currently the fastest growing ethnic group in New Zealand and could provide a suitable talent pool for development. Women returning to the workforce may also be a suitable group to target

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## APPENDIX 1

# APPENDIX 1: METHODOLOGY USED FOR CONSULTATION

### A1.1 AIMS OF CONSULTATION

Consultation was undertaken with the telecommunications industry in 2008 to:

- Verify and comment on labour market analysis and training provision data
- Review and update the 2007 Strategic Training Plan [STP]

This was in order to contribute to a strategic training plan to meet the current and future skill needs of the telecommunications industry. This is part of an ongoing process to provide a current STP that considers the design and maintenance of services, and qualifications and qualification pathways that meet industry needs.

### A1.2 BACKGROUND MATERIAL

ETITO has a broad picture of the current status of the telecommunications industry, from past research and consultation, and this informed the 2008 consultation. The material that was considered before 2008 consultation included:

- Telecommunications industry research report 2005
- Telecommunications research sector submission 2006
- Telecommunications strategic training plan 2007 Version
- Draft telecommunications labour market analysis

### A1.3 ELEMENTS OF CONSULTATION PROCESS

The consultation process consisted of the following aspects:

#### **A1.31 Notification of Advisory Groups and Stakeholders**

Notification of focus group consultation was placed on the 'telecommunications research' and 'latest news' pages of ETITO's website inviting stakeholders to register their interest in participating.

The Chair of TESSO was invited to suggest participants for consultation.

The ETITO Industry Training Manager for the telecommunications industry was notified and encouraged to put forward representative industry members.

Industry members were then selected and invited to participate.

#### **A1.32 Focus Group**

A focus group session was conducted. The focus group members were asked to read the following background material prior to the session:

- An outline of the purpose of the focus group
- Questions to be discussed in the focus group
- A copy of the 2007 version of the Strategic Training Plan
- Labour market analysis draft report

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At the session, they contributed their feedback on this material and communicated relevant knowledge which would support the production of a strategic training plan to meet the current and future skill needs of industry.

### **A1.33 Other Communications**

Some follow-up communications with members of industry also took place. These were conducted either face-to-face, over the phone, or electronically.

### **A1.34 Participants**

Those who took part in the focus group session are listed below. A number of other participants had also been invited but did not attend.

1. John D’Rose, Transfield Services
2. Chris Jones, TESSO
3. Ron Stevens, Downer EDI
4. Alan Walker, Gen-i
5. Brian Allen, Gravitas Training Solutions
6. Gavin Denby, ETITO

Also present to facilitate the session were:

1. Dominic Madell, Researcher, ETITO
2. Robyn Kunaiti, Research and Development Administrator, ETITO

Further information about some issues that were raised in the focus group session was also collected from TESSO by Chris Jones and forwarded to the lead researcher by email.

### **A1.35 Circulation of Strategic Training Plan**

This strategic training plan was also circulated more widely by email among members of industry to allow them to offer feedback.

## APPENDIX 2

### APPENDIX 2: PERCEIVED BENEFITS OF TRAINING

Table 2 shows a list of the perceived benefits of training as ranked by the six members of the focus group for the telecommunications industry. The lower the mean rank, the more important participants considered the benefit.

**Table 2: Perceived benefits of training by the telecommunications industry**

Benefits of Training	Mean Rank
Training increases employees' productivity	3.0
Training increases the quality of employees' work	3.1
Training reduces wasted time and materials	4.3
Training results in more motivated, satisfied employees	5.5
Training results in reduced recruitment costs through the internal promotion of skilled staff	5.5
Training results in employees with better 'soft skills' such as inter-staff communication, leadership and time-management	5.8
Training results in staff who better understand and are able to comply with industry regulations	5.8
Training results in higher standards for health and safety	6.2
Training results in employees that are more loyal to the company	7.8
Training increases employee retention	7.8

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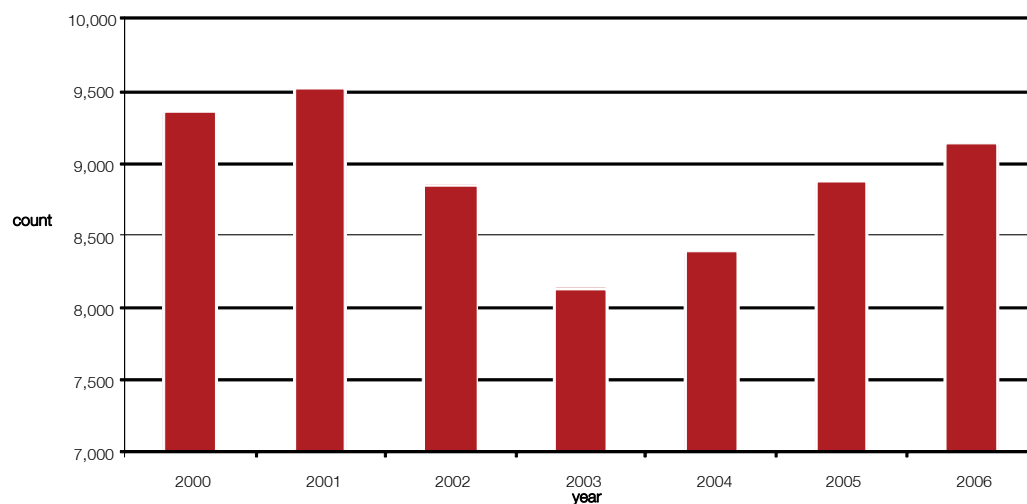
### APPENDIX 3: TRENDS IN THE TELECOMMUNICATIONS INDUSTRY

This section considers data provided by Statistics New Zealand representing national and regional industry trends for the telecommunications services sector, and describes key regions for the telecommunications industry.

#### A3.1 NATIONAL DATA

Figure 2 shows number of employees in the Telecommunications Services sector nationally for 2000-2006.

**Figure 2: Telecommunication services sector employees [National] [ANZSIC code J7120]**



The number of employees in the telecommunications services sector:

- Rose from 9360 in 2000 to 9520 in 2001 [1.7% increase]
- Fell from 9520 in 2001 to 8130 by 2003 [14.7% decrease]
- Rose from 8130 in 2003 to 9150 by 2006 [12.5% increase]

ETITO consultation with the telecommunications industry indicated that:

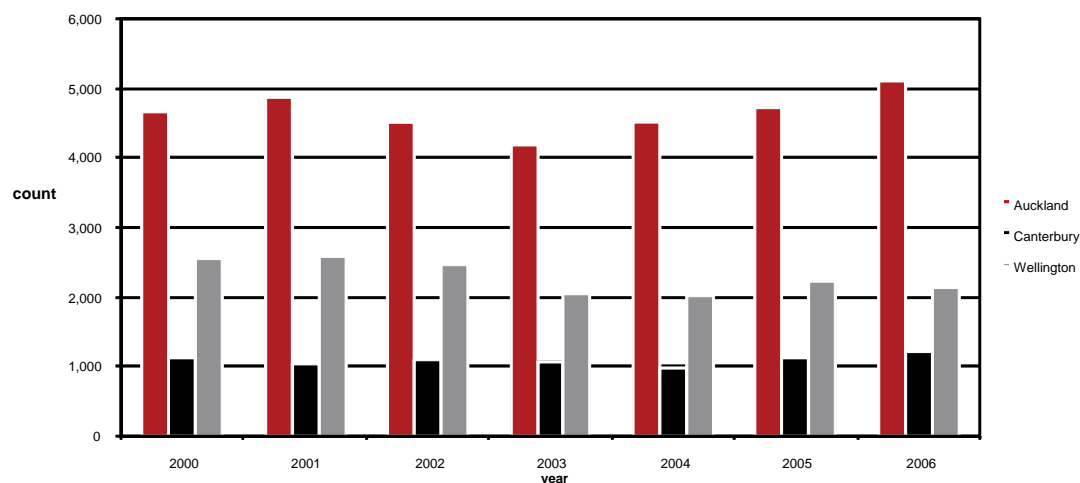
- There was a dip in the national numbers of telecommunications services sector employees from 2001-2003 because:
  - New technologies were emerging in the telecommunications industry around this time, but many organisations lacked confidence in these until larger companies such as Telecom had success with them. Employees left the telecommunications industry because of uncertainty over these new technologies
  - Companies invested heavily for the Y2K bug and so there were few funds available to invest in new ventures after 2000

## APPENDIX 3

### A3.2 REGIONAL DATA

Figure 3 shows numbers of employees in the three main regions of New Zealand [Auckland, Canterbury and Wellington] for the Telecommunications Services sector for 2000-2006. These three regions accounted for 92.2% of telecommunications services sector employees in New Zealand in 2006.

Figure 3: Telecommunication services sector employees [Main regions] [ANZSIC code J7120]



Among the three main regions of New Zealand:

- Auckland had the most telecommunications services sector employees between 2000 and 2006. This was followed by Wellington and then Canterbury
- Auckland had 4660 employees in the telecommunications services sector in 2000. This rose to 4870 in 2001 [4.5% increase] and then fell to 4170 by 2003 [14.4% decrease]. There was then an increase in the number of employees to 5080 by 2006 [21.8% increase]
- Wellington had 2560 employees in the telecommunications services sector in 2000. This number increased to 2570 in 2001 [0.4% increase] and then declined to 2100 by 2004 [21.8% decrease]. The number of employees then rose to 2240 by 2005 [11.4% increase] and fell again to 2130 in 2006 [4.9% decrease]
- Canterbury had 1140 employees in the telecommunications services sector in 2000. This number declined to 1050 in 2001 [7.9% decrease] and rose to 1100 in 2002 [4.8% increase]. The number then fell again to 980 by 2004 [10.9% decrease] and rose again to 1230 by 2006 [25.5% increase]

## APPENDIX 3

Figure 4: Telecommunication services sector employees [Other regions - North Island] [ANZSIC CODE J1720]

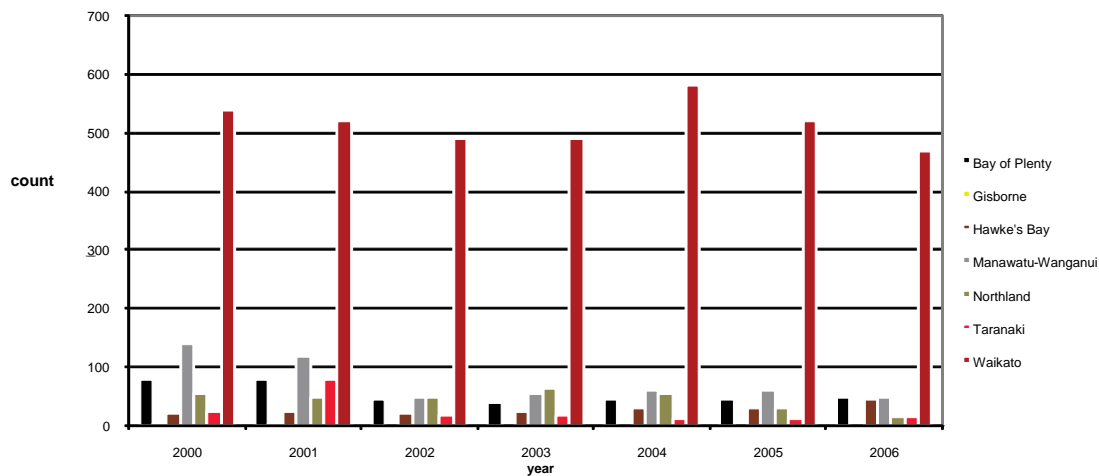


Figure 4 shows that among other regions of the North Island:

- Waikato had the most telecommunications services sector employees by some margin between 2000 and 2006. The number of employees was 540 in 2000. This fell to 490 by 2002, and remained at this level in 2003. The number of employees then rose to 580 in 2004 and fell again to 470 by 2006
- Manawatu-Wanganui had 140 employees in the telecommunications services sector in 2000. This number fell to 120 in 2001 and 50 in 2002. Between 2002 and 2006, the number of employees fluctuated between 50 and 60
- The Bay of Plenty had 80 employees in the telecommunications services sector in 2000 and 2001. The number of employees then fell to 45 in 2002 and fluctuated between 40 and 50 between 2003 and 2006
- Hawke's Bay had between 20 and 30 employees each year in the telecommunications services sector between 2000 and 2005. The number then increased to 45 in 2006
- Northland had 55 employees in the telecommunications services sector in 2000. The number of employees then fell to 50 in 2001 and 2002 and rose to 65 in 2003. The number of employees then fell to 15 by 2006
- Taranaki had 25 employees in the telecommunications services sector in 2000. This rose to 80 in 2001, and fell to 18 in 2002. The number of employees then fell to 12 by 2005 and rose to 15 in 2006
- Gisborne had three employees in the telecommunications services sector in 2000 and 2001 respectively and none between 2002 and 2006

## APPENDIX 3

Figure 5: Telecommunication services sector employees [Other regions - South Island] [ANZSIC CODE J1720]

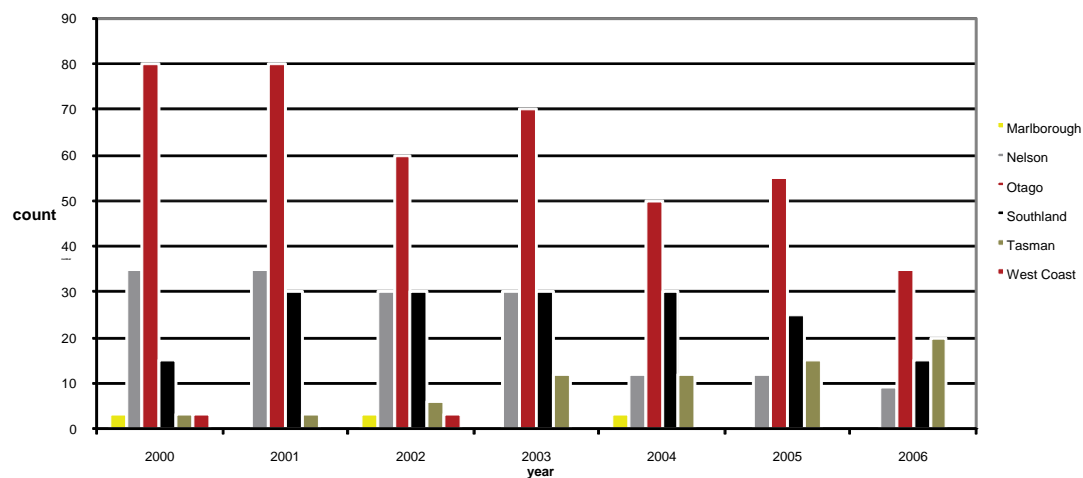


Figure 5 shows that among other regions of the South Island:

- Otago had the most telecommunications services sector employees between 2000 and 2006. The number of employees was 80 in 2000 and 2001 and then fell to 35 by 2006
- Tasman had three employees in the telecommunications services sector in 2000 and 2001. The number of employees then rose to 12 by 2003 and remained at this level in 2004. The number of employees then rose to 20 by 2006
- Southland had 15 employees in the telecommunications services sector in 2000. The number of employees then rose to 30 in 2001 and remained at this level until 2004. The number of employees then fell to 15 by 2006
- Nelson had 35 employees in the telecommunications services sector in 2000 and 2001. However, the number of employees fell to 9 by 2006
- Marlborough had zero or three employees in the telecommunications services sector each year from 2000-2006
- The West Coast had zero or three employees in the telecommunications services sector each year from 2000 to 2006

## APPENDIX 4

### APPENDIX 4: DEMAND FOR TRAINING

#### A4.1 OCCUPATIONS IN THE TELECOMMUNICATIONS INDUSTRY REQUIRING SPECIALIST TRAINING

Department of Labour information identifies occupations that are relevant to the telecommunications services industry. This information was presented to the ETITO focus group who then stated whether they agreed that these were relevant occupations, and, if so, whether each of these require a specialist telecommunications qualification. The focus group also identified other occupations that are relevant to the telecommunications industry, and whether these require specialist qualifications.

##### **A4.11 Occupations Requiring Specialist Training**

The occupations described in this section were considered relevant to the telecommunications industry by both the Department of Labour and the ETITO focus group.

Qualifications that those in the focus group considered most relevant to each occupation are listed beneath them, along with any comments made by them about the occupation.

##### **Telecommunications Technician**

[4.3% of telecommunications services sector according to Department of Labour]

- National Certificate in Telecommunications [Level 2]
- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Certificate in Telecommunications [Sales and Service] with strands in Sales and Support

Comments from focus group: 'This is the basic industry role.'

##### **Technical Representative**

[13.4% of telecommunications services sector according to Department of Labour]

- National Certificate in Telecommunications [Level 2]
- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio

Comments from focus group: 'This is 'helpdesk' work for which customer relationship skills are important.'

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### Computer Applications Engineer

[5.8% of telecommunications services sector according to Department of Labour]

- National Certificate in Telecommunications [Level 2]
- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Certificate in Telecommunications [Sales and Service] with strands in Sales and Support
- National Diploma in Engineering [Electrotechnology] [Level 6]

Comments from focus group: 'Two pathways may be needed for this role: one containing Levels 2, 3 and 4 telecommunications qualifications, and one starting immediately at the National Diploma in Engineering [NDE]'

### Electronic and Telecommunications Engineer

[3.9% of telecommunications services sector according to Department of Labour]

- National Certificate in Telecommunications [Level 2]
- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Diploma in Engineering [Electrotechnology] [Level 6]

Comments from focus group: 'A higher qualification, such as the National Diploma in Engineering [NDE], would be necessary for this role, but lower level qualifications might also contribute to the pathway.'

### Sales Representative

[4.2% of telecommunications services sector according to Department of Labour]

- National Certificate in Telecommunications [Sales and Service] with strands in Sales and Support

### Computer Support Technician

[3.4% of telecommunications services sector according to Department of Labour]

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- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio

### A4.12 Further Occupations Requiring Specialist Training

The following occupations [which had **not** been previously identified by the Department of Labour] were also considered relevant to the telecommunications industry by the consultation group, and requiring a specialist qualification. The qualifications which were considered most relevant to each occupation are listed beneath them.

#### Design Engineer

- National Diploma in Engineering [Electrotechnology] [Level 6]

#### Network Designer

- National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Mechanical, and Radio

#### Telecommunications Draftsman

- No current telecommunications qualification

### A4.13 Occupations Not Requiring Specialist Training

Sales and Marketing Manager, General Manager and Administration Manager were considered general roles within the telecommunications industry rather than technical, and not requiring a specialist qualification. In addition, the occupation Telephone Switchboard Operator was viewed as obsolete by the telecommunications industry.

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### A4.14 Summary

The following qualifications were described as relevant to the occupations listed below them:

- National Certificate in Telecommunications [Level 2]
  - Telecommunications Technician
  - Technical Representative
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
  - Telecommunications Technician
  - Technical Representative
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
  - Computer Support Technician
- National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio
  - Telecommunications Technician
  - Technical Representative
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
- National Certificate in Telecommunications [Sales and Service] [Level 3] with strands in Sales and Support
  - Telecommunications Technician
  - Computer Applications Engineer
  - Sales Representative
- National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Mechanical, and Radio
  - Network Designer
- National Diploma in Engineering [Electrotechnology] [Level 6]
  - Computer Applications Engineer
  - Electronic and Telecommunications Engineer
  - Design Engineer

The following ETITO qualifications were not described as relevant to any occupations within the telecommunications industry:

- National Certificate in Telecommunications [Research and Design] [Level 6] with strands in Electronics, Radio, Mechanical, and Software
- National Certificate in Telecommunications [Manufacture and Production] [Level 3]
- National Certificate in Telecommunications [Manufacture and Production] [Level 5] with strands in Electronics, Mechanical, and Radio

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- National Certificate in Telecommunications [Management and Operations] strands in Computer, Electronics, Mechanical and Radio
- National Certificate in Telecommunications [Maintenance and Repair] with strands in Computer, Electronics, Mechanical, and Radio

There is no qualification for a Telecommunications Draftsman. A case for meeting the skill needs with existing unit standards or for developing a national qualification needs exploration

### A4.2 USE OF ETITO TELECOMMUNICATIONS QUALIFICATIONS

This section describes levels of use of ETITO's telecommunications qualifications over the past five years linked to relevant occupations within the telecommunications industry.

For each ETITO qualification, data was collected from the New Zealand Qualifications Authority [NZQA]. This data is summarised in Table 3 and presented in section A4.34.

Data collected from NZQA indicates:

- Numbers of trainees nationally who have completed an ETITO qualification [either through ETITO or elsewhere] and had this verified by NZQA since 2003



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### A4.21 Patterns of Participation Data Summary

This section shows NZQA verifications for telecommunications qualifications and how qualifications relate to job roles. Graphs representing this data, broken down into gender and ethnicity can be found in Section A4.35.

**Table 3: Patterns of participation data summary**

Name of Qualification	Number of NZQA verifications					Relevant to which job roles?
	2003	2004	2005	2006	2007	
National Certificate in Telecommunications [Level 2]	14	8	17	8	33	Telecommunications Technician Technical Representative Computer Applications Engineer Electronic and Telecommunications Engineer
National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio	106	66	16	10	4	Telecommunications Technician Technical Representative Computer Applications Engineer Computer Support Technician Electronic and Telecommunications Engineer
National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio	1	3	2	2	1	Telecommunications Technician Technical Representative Computer Applications Engineer Electronic and Telecommunications Engineer



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Name of Qualification	Number of NZQA verifications					Relevant to which job roles?
	2003	2004	2005	2006	2007	
National Certificate in Telecommunications [Maintenance and Repair] [Level 4] with strands in Computer, Electronic, Mechanical, and Radio	70	17	6	0	0	-
National Certificate in Telecommunications [Management and Operations] [Level 4] with strands in Computer, Electronics, Mechanical and Radio	22	5	1	0	0	-
National Certificate in Telecommunications [Manufacture and Production] [Level 3]	0	0	0	0	0	-
National Certificate in Telecommunications [Manufacture and Production] [Level 5] with strands in Electronics, Mechanical, and Radio	0	0	0	0	0	-
National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Mechanical, and Radio	9	10	6	5	1	Network Designer
National Certificate in Telecommunications [Research and Design] [Level 6] with strands in Electronics, Radio, Mechanical, and Software	0	0	0	0	0	-
National Certificate in Telecommunications [Sales and Service] [Level 3] with strands in Sales and Support	0	0	0	0	0	Telecommunications Technician Computer Applications Engineer Sales Representative
National Diploma in Engineering [Level 6]	23	19	22	46	38	Computer Applications Engineer Design Engineer Electronic and Telecommunications Engineer

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Table 3 shows that the following qualifications had a **number of NZQA verifications** over the past five years and were considered **relevant** to occupations within the telecommunications industry by the consultation group:

- National Certificate in Telecommunications [Level 2]
- National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio<sup>7</sup>
- National Diploma in Engineering [Level 6]

Table 3 shows that the following qualifications had **a few NZQA verifications** over the past five years and were considered **relevant** to occupations within the telecommunications industry by the consultation group:

- National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
- National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Mechanical, and Radio

Table 3 shows that the following qualifications had **no NZQA verifications** over the past five years but were considered **relevant** to occupations within the telecommunications industry by the consultation group:

- National Certificate in Telecommunications [Sales and Service] [Level 3] with strands in Sales and Support

Table 3 shows that the following qualifications had **diminishing numbers of NZQA verifications** since 2003 and were considered **not relevant** to occupations within the telecommunications industry by the consultation group:

- National Certificate in Telecommunications [Maintenance and Repair] [Level 4] with strands in Computer, Electronic, Mechanical, and Radio
- National Certificate in Telecommunications [Management and Operations] [Level 4] with strands in Computer, Electronics, Mechanical and Radio

Table 3 shows that the following qualifications had **no NZQA verifications** over the past five years and were also considered **not relevant** to occupations within the telecommunications industry by the consultation group:

- National Certificate in Telecommunications [Manufacture and Production] [Level 3]
- National Certificate in Telecommunications [Manufacture and Production] [Level 5] with strands in Electronics, Mechanical, and Radio
- National Certificate in Telecommunications [Research and Design] [Level 6] with strands in Electronics, Radio, Mechanical, and Software

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### A4.3 DEMAND FOR SKILLED LABOUR BY INDUSTRY

#### A4.31 Occupational Skill Shortages

The ETITO consultation group suggested that there are currently skill shortages in the telecommunications industry, although could not identify the specific occupations for which this was the case.

However, data from the Department of Labour suggests that there are skill shortages for the occupations telecommunications technician and electronic and telecommunications engineer.

According to Department of Labour data:

- **Telecommunications technician is a role which is in decline, but there are still difficulties in supplying enough workers to fill available positions**

Table 6 indicates that most potential trainees within the telecommunications industry are technical representatives. Therefore, technical representative work may be becoming more important to the telecommunications industry than technician work. However, the consultation group stated that the technical representative role still requires training at Levels 2, 3 and 4.

The data in Table 4 shows that for telecommunications technicians:

- 30% fewer jobs were advertised in 2006-07 than in 2005-06
- This occupation is advertised on the short-term immigration skills shortage list, with 340 people granted a temporary work permit in 2006/2007 and 79 skilled migrant category persons approved in 2006/2007
- Vacancy fill rates in 2006 were 27%
- There were 6.5 suitable applicants per vacancy in 2006<sup>1</sup>
- Employment fell by 20.1% in 2001-2006 and 38.4% in 1996-2006

According to Department of Labour data:

- **Electronic and telecommunications engineer is a role which is showing growth, and there are difficulties in supplying enough workers to fill positions**

The data in Table 4 shows that for electronic and telecommunications engineers:

- 183% more jobs were advertised in 2006-07 than in 2005-06
- This occupation is advertised on the long-term immigration skill shortage list, with 128 people granted a temporary work permit in 2006/2007 and 112 skilled migrant category persons approved in 2006/2007
- Vacancy fill rates in 2006 were 25%
- There were 2.5 applicants per vacancy in 2006
- Employment grew by 14.6% in 2001-06 and 65.0% in 1996-2006

---

<sup>1</sup> This figure may suggest that there should have been enough suitable applicants per vacancy in 2006 to fill this occupation. However, the data may not be a true indicator of the number of suitable applicants because the Department of Labour have stated that it is hard to identify what 'suitable' means.

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**Table 4: Labour market statistics for Telecommunications Technician [NZSCO 31141] and Electronic and Telecommunications Engineer [NZSCO 21441]**

Occupation [NZSCO code]		Telecommunications Technician [31141]	Electronic and Telecommunications Engineer [21441]
Number of advertised vacancies	Jul-2005 to Jun-2006	54	18
Number of advertised vacancies	Jul-2006 to Jun-2007	38	51
% growth this year over last year		-30%	183%
Vacancy fill rates 2006		27%	25%
Suitable applicants per vacancy 2006		6.5	2.5
On an immigration NZ skill shortage list?		Short Term	Long Term
Persons granted temporary work permit	2006/2007	340	128
Skilled migrant category persons approved	2006/2007	79	112
Number employed 1996		3,510	1,227
Number employed 2001		2,706	1,767
Number employed 2006		2,163	2,025
Employment growth 01-06		-20.1%	14.6%
Employment growth 96-06		-38.4%	65.0%

### A4.32 Demographic Aspects of Telecommunications Industry Employees

Table 5 shows demographic information for two occupations relevant to the telecommunications industry [data from the Department of Labour]:

- Telecommunications Technician
- Electronic and Telecommunications Engineer

Data suggests that encouraging those from less represented demographic groups into the telecommunications industry could contribute to a reduction in skill shortages. For example, the Asian population is currently the fastest growing in New Zealand and could provide a suitable talent pool for development. Women returning to the workforce could also be targeted as females are under-represented in the industry.

The data shown in Table 5 indicates that a typical telecommunications technician:

- Is a male New Zealand European
- Is between 30 and 54 years of age
- Has some post-school qualifications
- Is paid around \$48 000 per annum
- Works 30-59 hours a week.

The data shown in Table 5 also indicates that a typical electronic and telecommunications engineer:

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- Is a male New Zealand European
- Is between 30 and 54 years of age
- Has some post-school qualifications
- Is paid around \$60 000 per annum
- Works 30-59 hours a week

**Table 5: Demographic information for Telecommunications Technician [NZSCO 31141] and Electronic and Telecommunications Engineer [NZSCO 21441]**

Occupation [NZSCO code]		Telecommunications Technician [31141]	Electronic and Telecommunications Engineer [21441]
Median income 2006		\$46,700	\$59,000
Average income 2006		\$49,300	\$63,000
% Male 2006		96%	85%
% Female 2006		4%	15%
Ethnic diversity 2006	% NZ European	76%	79%
	% Maori	9%	5%
	% Pacific	5%	2%
	% Other	10%	14%
Age groups 2006	15-29	14%	22%
	30-54	75%	65%
	55 plus	11%	13%
Highest educational qualification 2006	Percent no qualifications	6%	2%
	Percent school qualifications only	23%	20%
	Percent post-school qualified	70%	78%
Usual hours worked per week 2006	Percent less than 30 hours	4%	11%
	Percent 30-59 hours	93%	87%
	Percent 60 hours plus	2%	1%

### A4.33 Numbers of Potential Trainees within the Telecommunications Industry

Table 6 shows potential numbers of trainees for occupations within the telecommunications services sector of the telecommunications industry<sup>2</sup>.

These figures should be treated with caution because:

- The same process cannot be undertaken with other occupations identified by the ETITO consultation group because Department of Labour data does not exist for these. These

<sup>2</sup> These figures have been derived using the following calculation with Department of Labour and Statistics New Zealand data:

number of employees in the telecommunications services sector [for each key region] x percentage of the telecommunications services industry which occupation comprises x percentage of employees without post-school qualifications for that occupation

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occupations are: Design Engineer, Network Designer and Telecommunications Draftsman

- The data only takes into account the telecommunications services sector of the telecommunications industry
- The data only takes into account the key regions for the telecommunications industry as identified in section 2 of this report

**Table 6: Potential trainees within the telecommunications industry**

Occupation	Region	Potential trainees within key regions of telecommunications services sector
Telecommunications Technician	Auckland	64 trainees
	Wellington	28 trainees
	Canterbury	24 trainees
	Waikato	7 trainees
	TOTAL	123 trainees
Electronic and Telecommunications Engineer	Auckland	44 trainees
	Wellington	19 trainees
	Canterbury	17 trainees
	Waikato	5 trainees
	TOTAL	85 trainees
Computer Applications Engineer	Auckland	71 trainees
	Wellington	31 trainees
	Canterbury	27 trainees
	Waikato	7 trainees
	TOTAL	136 trainees
Computer Support Technician	Auckland	62 trainees
	Wellington	27 trainees
	Canterbury	24 trainees
	Waikato	6 trainees
	TOTAL	119 trainees
Technical Representatives	Auckland	383 trainees
	Wellington	168 trainees
	Canterbury	146 trainees

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Occupation	Region	Potential trainees within key regions of telecommunications services sector
	Waikato	39 trainees
	TOTAL	736 trainees
Sales Representatives	Auckland	120 trainees
	Wellington	53 trainees
	Canterbury	45 trainees
	Waikato	12 trainees
	TOTAL	230 trainees
TOTAL across telecommunications services industry	Auckland	744 trainees
	Wellington	326 trainees
	Canterbury	283 trainees
	Waikato	76 trainees
	TOTAL	1429 trainees

### A4.34 Demand for Training by Industry

- Local loop unbundling has increased the demand for skilled labour as this has required upgrades to telecommunications networks. Overseas labour has tended to be used to complete this work
- The following future events will increase the numbers of employees required by the telecommunications industry over the next five years:
  - Telecom's transformation to next generation networks, which will suit, for example, broadband technology
  - Provision of alternative networks to those of Telecom
  - Upgrade and installation of new cabinets with broadband equipment
  - Activity from utility companies building private fibre networks for local councils
  - New network operators
  - The aging workforce

It is unlikely that demand for labour resource will decrease when future events have concluded, because of the constant updating of telecommunications technologies

The specific regional impact of these events could not be identified by the consultation group

- Different skill sets may be needed by the telecommunications industry in the future. These relate to:
  - Increased importance of ICT
  - Increased use of radio based systems
  - Increased electrical work relating to telecommunications systems
  - Increased requirement for high quality network jointing skills
  - Integration of voice and data networks
  - Increased complexity of home automation and entertainment systems

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- Diagnosis of faults and replacement of equipment instead of repair
- There are likely to be future skill shortages in the telecommunications industry over the next five years. The reasons for this are:
  - A lack of applicants
  - A lack of interest in training by industry
  - A lack of training and qualification provision
- There is increasing overlap between the ICT and telecommunications industries and this development is likely to continue in the future. [According to the Organisation for Economic Cooperation and Development [OECD], the ICT industry can be defined as a combination of manufacturing and services industries that capture, transmit and display data and information electronically.] For example, the company Gen-I states that it is transitioning from being a telecommunications provider to an ICT Solutions Service and, as such, the type and scope of training that it requires is changing

### A4.35 Patterns of Participation Graphs

The figures in this section show patterns of participation for ETITO telecommunications qualifications from 2003-2007, including the demographic characteristics [gender and ethnicity] of trainees.

**The patterns of participation graphs highlight that the vast proportion of telecommunications trainees are male, and that a large proportion of these are of New Zealand European ethnicity.**

The numbers of NZQA verifications for most telecommunications qualifications has decreased over the past five years. The main reason for this may be that ETITO undertook Recognition of Prior Learning [RPL] for 1251 trainees between the years 2001-2004, with much RPL taking place in 2003. This would have led to high numbers of verifications over these years and explains why verification figures for 2005-2007 would be smaller by comparison.

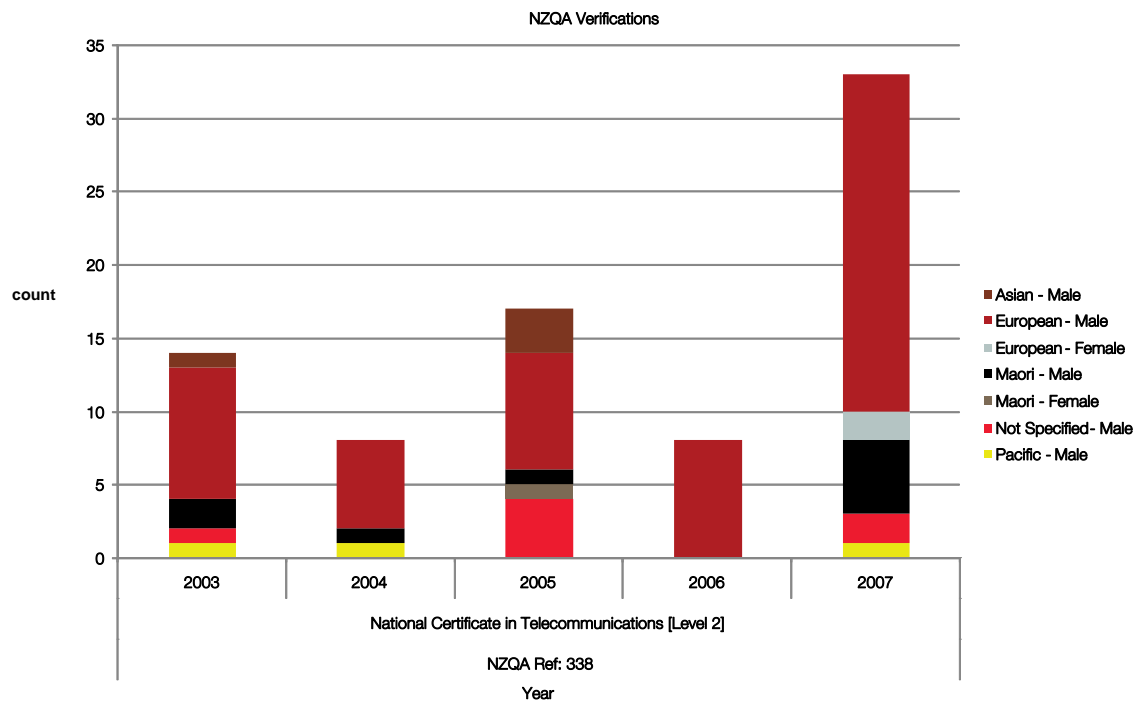
An exception may be the National Certificate in Telecommunications [Level 2] for which there has been a substantial increase in the number of verifications in 2007 [see Figure 6.]

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### NZQA Ref 338: National Certificate in Telecommunications [Level 2]

Figure 6 shows the number of trainees who had this qualification verified nationally since 2003.

Figure 6: NZQA Ref 338: National Certificate in Telecommunications [Level 2] – NZQA [National] Verifications



For the National Certificate in Telecommunications [Level 2]:

- The total number of national verifications over the past five years was 80
- The number of national verifications ranged annually from eight to 33 over the past five years
- The number of national verifications fell from 14 in 2003 to eight in 2004. The number of verifications then rose to 17 in 2005 and fell to eight in 2006, before rising to 33 in 2007
- Of the national trainees who were verified by NZQA over the past five years:
  - 68% indicated that they were European male
  - Nine indicated that they were Maori male
  - Seven indicated that they were male but did not specify their ethnicity
  - Four indicated that they were Asian male
  - Three indicated that they were Pacific male
  - Two indicated that they were European female
  - One indicated that they were Maori female

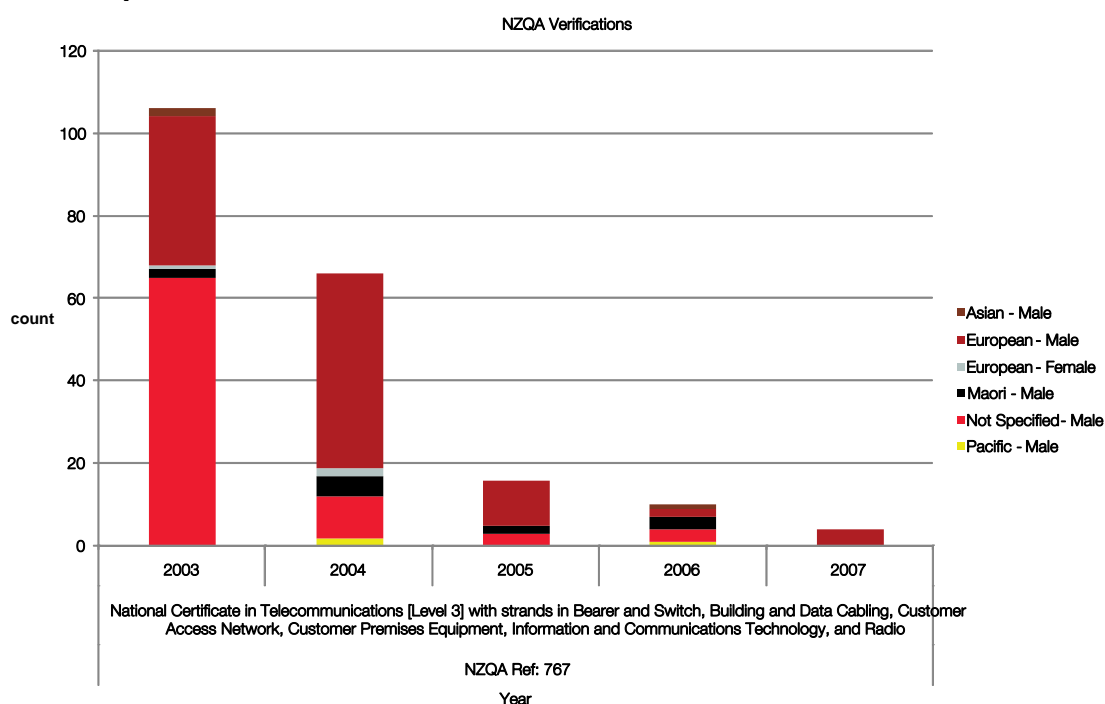
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NZQA Ref 767: National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio

Figure 7 shows the number of trainees who had this qualification verified nationally since 2003.

Figure 7: NZQA Ref 767: National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio – NZQA [National] Verifications

[N.B. This qualification did not contain the “Information and Communications Technology” strand until 2005]



For the National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology, and Radio:

- The total number of national verifications over the past five years was 202
- The annual number of national verifications ranged from four to 106 over the past five years
- The number of verifications was 106 in 2003 and fell to four by 2007
- Of the national trainees who were verified by NZQA over the past five years:
  - 50% indicated that they were European male
  - 40% indicated that they were male but did not specify their ethnicity
  - 6% indicated that they were Maori male
  - Three indicated that they were Asian male
  - Three indicated that they were European female

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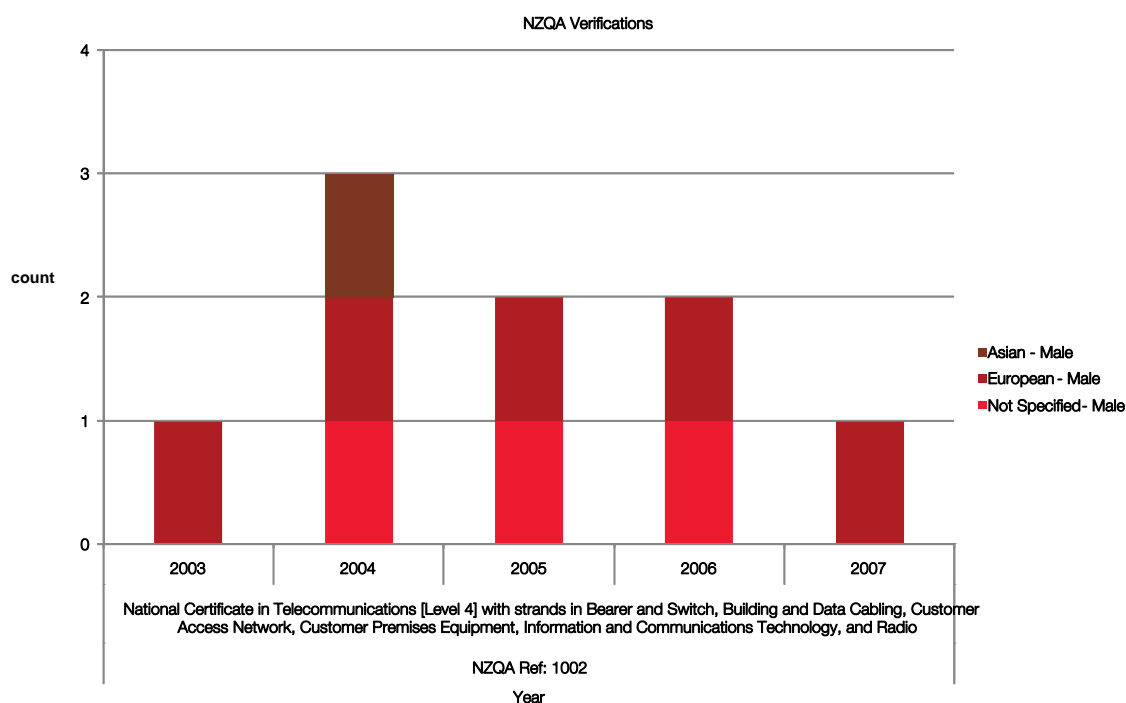
- Three indicated that they were Pacific male

**NZQA Ref 1002: National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio**

[N.B. This qualification did not contain the “Information and Communications Technology” strand until 2008]

Figure 8 shows the number of trainees who have had this qualification verified nationally since 2003.

**Figure 8: NZQA Ref 1002: National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio – NZQA Verifications**



For the National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio:

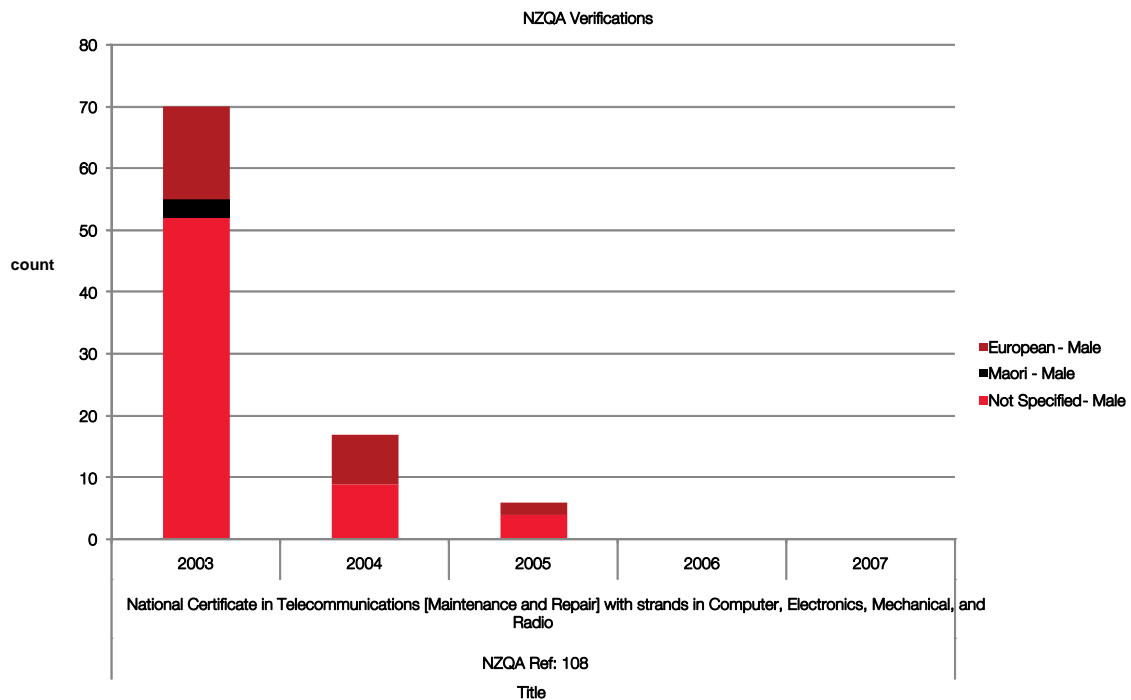
- The total number of national verifications over the past five years was nine
- The annual number of national verifications ranged from one to three over the past five years
- Of the national trainees who were verified by NZQA over the past five years:
  - Five indicated that they were European male
  - Three indicated that they were male but did not specify their ethnicity
  - One indicated that they were Asian male

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### NZQA Ref 108: National Certificate in Telecommunications [Maintenance and Repair] [Level 4] with strands in Computer, Electronic, Mechanical, and Radio

Figure 9 shows the number of trainees who have had this qualification verified nationally since 2003.

Figure 9: NZQA Ref 108: National Certificate in Telecommunications [Maintenance and Repair] [Level 4] – NZQA Verifications



For the National Certificate in Telecommunications [Maintenance and Repair]:

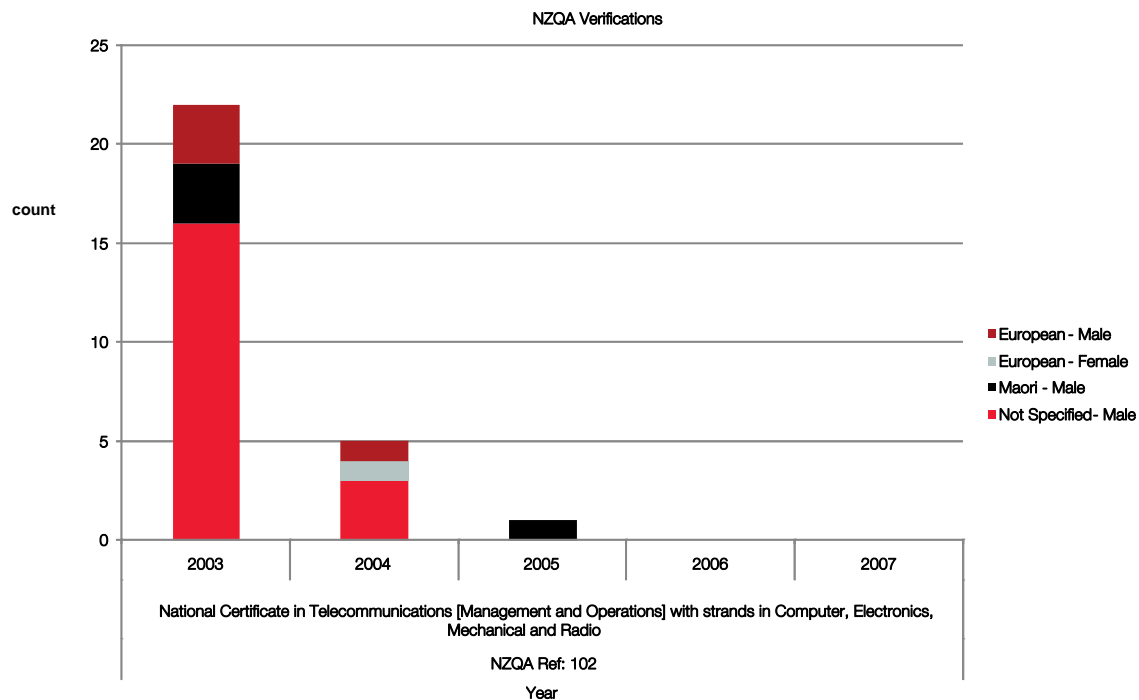
- The total number of national verifications over the past five years was 93
- The annual number of national verifications ranged from zero to 70 over the past five years
- Of the national trainees who were verified by NZQA over the past five years:
  - 70% indicated that they were male but did not specify their ethnicity
  - 27% indicated that they were European male
  - Three indicated that they were Maori male

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### NZQA Ref 102: National Certificate in Telecommunications [Management and Operations] [Level 4] with strands in Computer, Electronics, Mechanical and Radio

Figure 10 shows the number of trainees who have had this qualification verified nationally since 2002.

Figure 10: NZQA Ref 102: National Certificate in Telecommunications [Management and Operations] [Level 4] with strands in Computer, Electronics, Mechanical and Radio – NZQA [National] Verifications



For the National Certificate in Telecommunications [Management and Operations] with strands in Computer, Electronics, Mechanical and Radio:

- The total number of national verifications over the past five years was 28
- The number of national verifications ranged annually from zero to 22 over the past five years
- There were 22 verifications in 2003. The number of verifications then fell to five in 2004 and zero by 2006. The number of verifications remained at zero in 2007
- Of the national trainees who were verified by NZQA over the past five years:
  - 68% indicated that they were male but did not specify their ethnicity
  - Four indicated that they were European male
  - Four indicated that they were Maori male
  - One indicated that they were European female

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### NZQA Ref 106: National Certificate in Telecommunications [Manufacture and Production] [Level 3]

There is no NZQA verification data for this qualification for the past five years.

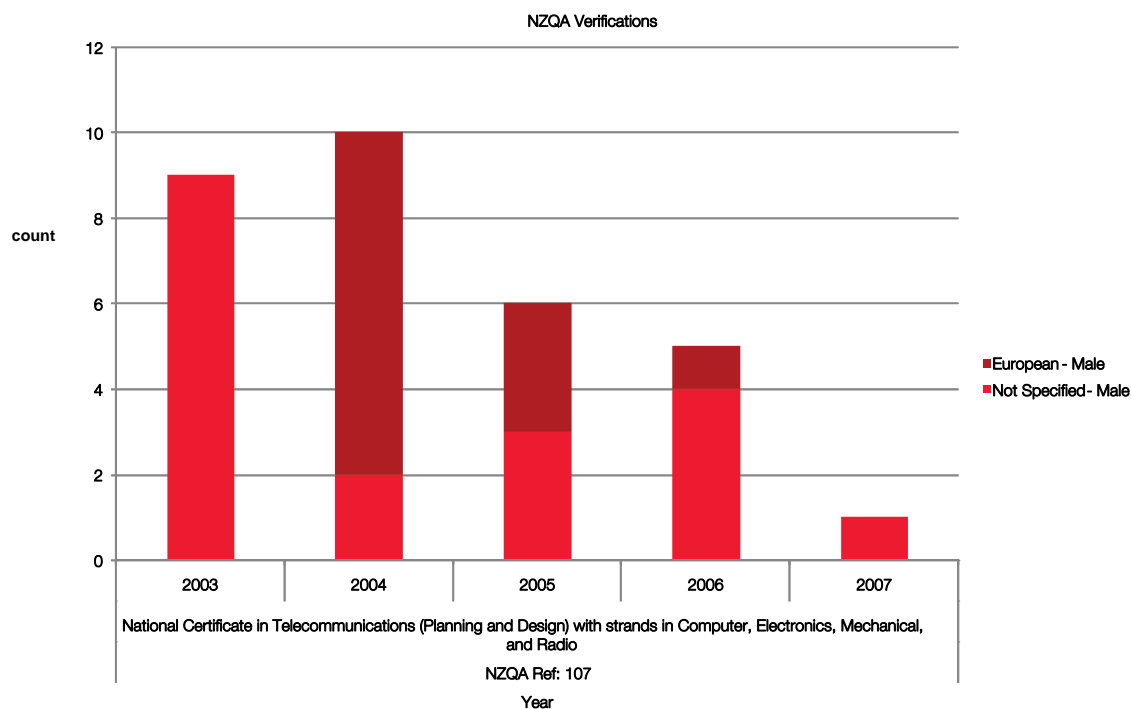
### NZQA Ref 109: National Certificate in Telecommunications [Manufacture and Production] [Level 5] with strands in Electronics, Mechanical, and Radio

There is no NZQA verification data for this qualification for the past five years.

### NZQA Ref 107: National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Mechanical, and Radio

Figure 11 shows the number of trainees who had this qualification verified nationally since 2002.

Figure 11: NZQA Ref 107: National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Mechanical, and Radio – NZQA Verifications



For the National Certificate in Telecommunications [Planning and Design] [Level 4] with strands in Computer, Electronics, Medical and Radio:

- The total number of national verifications over the past five years was 31
- The annual number of national verifications ranged from one to ten over the past five years
- The number of verifications was nine in 2003 and 10 in 2004. The number of verifications then fell to one by 2007
- Of the national trainees who were verified by NZQA over the past five years:

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- 61% indicated that they were male but did not specify their ethnicity
- 39% indicated that they were European male

### NZQA Ref 255: National Certificate in Telecommunications [Research and Design] [Level 6] with strands in Electronics, Radio, Mechanical and Software

There is no NZQA verification data for this qualification for the past five years.

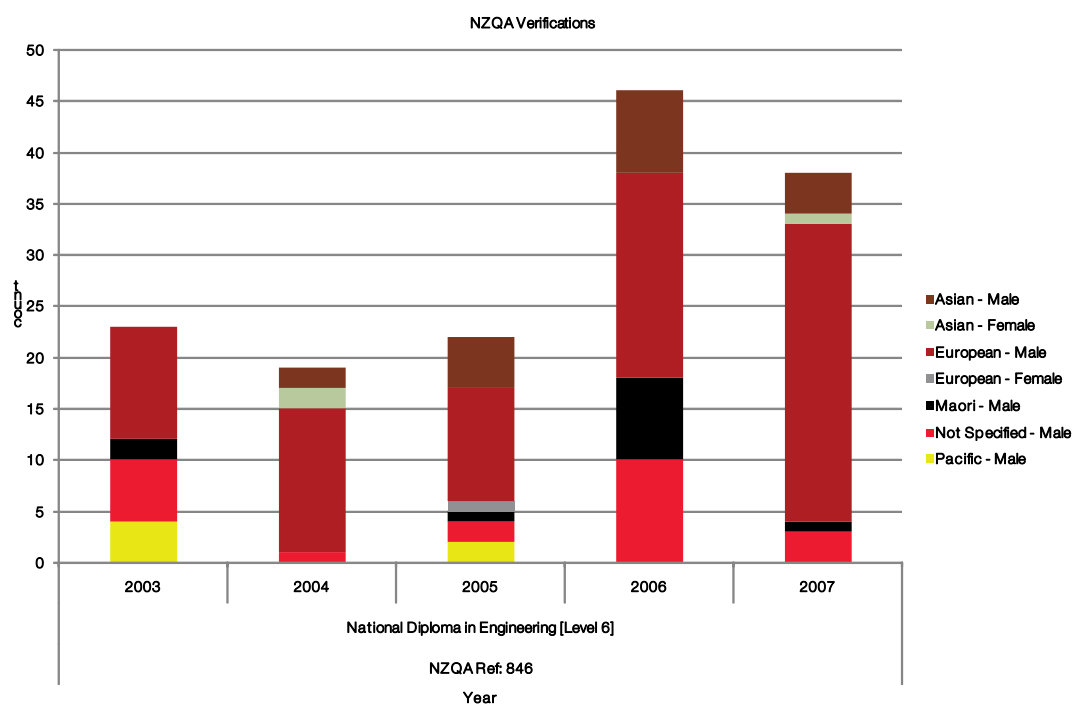
### NZQA Ref 104: National Certificate in Telecommunications [Sales and Service] [Level 3] with strands in Sales and Support

There is no NZQA verification data for this qualification for the past five years.

### NZQA Ref 1313: National Diploma in Engineering

There are no verifications for this qualification for the past five years as this qualification was only registered on the NQF in August 2007. However, verifications for the previous version of this qualification are below.

Figure 12: NZQA Ref 846: National Diploma in Engineering – NZQA Verifications



For the National Diploma in Engineering [Level 6]:

- The total number of national verifications over the past five years was 155
- The annual number of national verifications ranged from 19 to 46 over the past five years
- The number of verifications was 23 in 2003 and fell to 19 in 2004. The number of verifications rose to 22 in 2005 and 46 in 2006 before falling to 38 in 2007
- Of the national trainees who were verified by NZQA over the past five years:

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- Six indicated that they were Pacific male
- 15% indicated that they were male but did not specify their ethnicity
- 8% indicated that they were Maori male
- One indicated that they were European female
- 57% indicated that they were European male
- Three indicated that they were Asian female
- 13% indicated that they were Asian male



## APPENDIX 5

### APPENDIX 5: SUPPLY OF SKILLED LABOUR

#### A5.1 CURRENT QUALIFICATION PROVISION BY REGION

Table 7 shows regions arranged in order of numbers of employees within the telecommunications services sector [according to available Statistics New Zealand data for 2006] and how this links to qualification provision in each area.

**Table 7: Employees in telecommunications industry by region, linked with provision of telecommunications qualifications**

Region	Telecommunications services sector employees [2006]	TEOs in region providing any of ETITO telecommunications qualifications [2008] [excluding ITOs]	Telecommunications qualifications provided in region	Other relevant telecommunications qualifications provided in region/provider
Auckland	5080	1) WELTEC [Distance Learning] 2) Transfield E & T 3) DJC and Associates 4) MIT	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]  National Diploma in Engineering [Electrotechnology] [Level 6]	Diploma in Electrotechnology [Specialty] [Level 6] / Auckland University of Technology  Bachelor of Engineering [Level 7] / Auckland University of Technology  Bachelor of Engineering [Level 7] / University of Auckland  Bachelor of Engineering Technology [Level 7] / University of Auckland  Bachelor of Engineering Technology [Level 7] / Massey University

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Region	Telecommunications services sector employees [2006]	TEOs in region providing any of ETITO telecommunications qualifications [2008] [excluding ITOs]	Telecommunications qualifications provided in region	Other relevant telecommunications qualifications provided in region/provider
Wellington	2130	1) WELTEC [Distance Learning] 2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]  National Diploma in Engineering [Electrotechnology] [Level 6]	Bachelor of Engineering Technology [Level 7] / Massey University  Bachelor of Engineering Technology [Electronic Engineering] [Level 7] / Massey University
Canterbury	1230	1) WELTEC [Distance Learning] 2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]	Certificate in Applied Electronics Technology [Level 3] / ELECTEC
Waikato	470	1) WELTEC [Distance Learning] 2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]	
Hawke's Bay	45	1) WELTEC [Distance Learning]	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]	

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Region	Telecommunications services sector employees [2006]	TEOs in region providing any of ETITO telecommunications qualifications [2008] [excluding ITOs]	Telecommunications qualifications provided in region	Other relevant telecommunications qualifications provided in region/provider
Bay of Plenty	50	1) WELTEC [Distance Learning] 2) Transfield E & T 3) Cyberwaka Training Academy	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]	
Manawatu-Wanganui	50	1) WELTEC [Distance Learning] 2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]  National Diploma in Engineering [Electrotechnology] [Level 6]	
Otago	35	1) WELTEC [Distance Learning] 2) Transfield E & T 3) Otago Polytechnic	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]  National Diploma in Engineering [Electrotechnology] [Level 6]	

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Region	Telecommunications services sector employees [2006]	TEOs in region providing any of ETITO telecommunications qualifications [2008] [excluding ITOs]	Telecommunications qualifications provided in region	Other relevant telecommunications qualifications provided in region/provider
Tasman	20	1) WELTEC [Distance Learning]	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]	
Southland	15	1) WELTEC [Distance Learning]  2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]	
Taranaki	15	1) WELTEC [Distance Learning]  2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]	
Northland	15	1) WELTEC [Distance Learning]	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]	Certificate in Electrical Engineering [Level 2] / Northland Polytechnic

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Region	Telecommunications services sector employees [2006]	TEOs in region providing any of ETITO telecommunications qualifications [2008] [excluding ITOs]	Telecommunications qualifications provided in region	Other relevant telecommunications qualifications provided in region/provider
Nelson	9	1) WELTEC [Distance Learning] 2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]	
Gisborne	0	1) WELTEC [Distance Learning] 2) Transfield E & T	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]  National Certificate in Telecommunications [Level 4]	
Marlborough	0	1) WELTEC [Distance Learning]	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]	
West Coast	0	1) WELTEC [Distance Learning]	National Certificate in Telecommunications [Level 2]  National Certificate in Telecommunications [Level 3]	

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Table 7 indicates that:

- There is training provision in telecommunications for all regions through WELTEC, as this polytechnic offers distance learning
- Transfield E & T provides training for its employees nationally
- DJC and Associates provides training from Auckland
- Cyberwaka Training Academy provides training from the Bay of Plenty
- Within New Zealand, training is currently only provided for the following national qualifications:
  - National Certificate in Telecommunications [Level 2]
  - National Certificate in Telecommunications [Level 3] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio
  - National Certificate in Telecommunications [Level 4] with strands in Bearer and Switch, Building and Data Cabling, Customer Access Network, Customer Premises Equipment, Information and Communications Technology and Radio [this qualification is only provided in full by Transfield, and workplace assessment by DJC and Associates]
  - National Diploma in Engineering [Electrotechnology] [Level 6]
- Available non-national qualifications in telecommunications [and their providers] are:
  - Certificate in Electrical Engineering [Level 2] / Northland Polytechnic
  - Certificate in Applied Electronics Technology [Level 3] / ELECTEC
  - Diploma in Electrotechnology [Specialty] [Level 6] / Auckland University of Technology
  - Bachelor of Engineering [Level 7] / Auckland University of Technology
  - Bachelor of Engineering [Level 7] / University of Auckland
  - Bachelor of Engineering Technology [Level 7] / University of Auckland
  - Bachelor of Engineering Technology [Level 7] / Massey University
  - Bachelor of Engineering Technology [Electronic Engineering] [Level 7] / Massey University

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### A5.2 SPECIFIC PROVISION ISSUES

The following provision issues, which were described in the 2007 strategic training plan, were also considered priority issues for the 2008 strategic training plan by the consultation group:

- Provide flexible qualification delivery, including timing of classes and use of distance/online learning.

Comments given were:

- On-line provision is useful, although it may take time for trainees to adapt to this
- On-line learning is an “age” issue. Younger trainees may be more adept at this
- A variety of training methods are needed by industry
- Distance and online learning are generally suited to the delivery of telecommunications qualifications, but discipline is needed from trainees for them to complete qualifications in this way

The following provision issues, which were described in the 2007 strategic training plan, were considered relevant to the telecommunications industry by the consultation group, but not necessarily priorities:

- Provide resources for older workers to update skills [it was stated that all workers need to keep their skills up-to-date, not just older workers]
- Introduce strategies to encourage minority groups to train [it was stated that this should only be undertaken if this has an impact on the numbers of trainees available, not as an end in itself]

### A5.3 SOLUTIONS TO SKILL SHORTAGES

Solutions to skill shortages might include the following:

- Training apprentices for the future
- Marketing the positive aspects of telecommunications qualifications to school leavers and parents
- Recruiting from overseas
- Encouraging those from less represented demographic groups into telecommunications training. For example, the Asian population is currently the fastest growing in New Zealand and could provide a suitable talent pool for development. Women returners may also be a suitable group to target

### A5.4 QUALIFICATION PROVISION BY INSTITUTION

Tables in this section show accredited providers for each of ETITO’s telecommunications qualifications. The percentage of those who are active is shown at the end of each table. Providers with multiple locations were counted as representing a single provider and TEOs who would normally deliver only workplace assessment [that is ITOs] have not been included in calculations.

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**Table 8: Providers of NZQA Ref 338: National Certificate in Telecommunications [Level 2]**

Accredited Institutions	Provider type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	Yes	-
ETITO	ITO	Yes	-
1. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
2. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
3. Aoraki Polytechnic	Polytechnic	Yes	Part-time block courses over 18 months to two years to complete
4. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
5. Manukau Institute of Technology	Polytechnic	No	-
6. Northland Polytechnic	Polytechnic	No	-
7. The Open Polytechnic of New Zealand	Polytechnic	Yes. Delivers the electrical units of the qualification	Distance learning with some informational e-learning and block course of 5 days
8. Unitec New Zealand	Polytechnic	No	-
9. Wellington Institute of Technology	Polytechnic	No	-
10. Western Institute of Technology at Taranaki	Polytechnic	No	-
11. Whitireia Community Polytechnic	Polytechnic	No	-
12. Areva T & D New Zealand Limited	Private Training Establishment	No	-
13. Cyberwaka Training Academy	Private Training Establishment	No	-
14. DJC & Associates Ltd	Private Training Establishment	Yes	1-4 week block courses
15. Electec National College of Technology Limited	Private Training Establishment	No	-
16. Future Skills Academy	Private Training Establishment	No	-
17. Institute of Applied Learning Limited	Private Training Establishment	No	-
18a. The Electrical Training Company Limited - Auckland	Private Training Establishment	No	-
18b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
19. The Energy Trainers Limited	Private Training Establishment	No	-
20. Transfield Services Training [New Zealand] Ltd	Private Training Establishment	Yes	Face-to-face learning, block course and distance learning without online support
21. Auckland University of Technology	University	No	-

**Number of accredited TEOs: 21**

**% of active accredited TEOs: 19%**

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**Table 9: Providers of NZQA Ref 767: National Certificate in Telecommunications [Level 3]**

Accredited Institutions	Provider Type	Active Provider?	Type of learning?
Electricity Supply ITO	ITO	Yes	Workplace assessment
ETITO	ITO	Yes	Workplace assessment
1. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
2. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
3. Aoraki Polytechnic	Polytechnic	Yes	Part-time block courses over 18 months to two years to complete
4. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
5. Manukau Institute of Technology	Polytechnic	No	-
6. Northland Polytechnic	Polytechnic	No	-
7. The Open Polytechnic of New Zealand	Polytechnic	No	-
8. Unitec New Zealand	Polytechnic	No	-
9. Wellington Institute of Technology	Polytechnic	Yes. Delivers building and data cabling, radio and bearer and switch strands of the qualification	Distance learning- no online element
10. Western Institute of Technology at Taranaki	Polytechnic	No	-
11. Whitireia Community Polytechnic	Polytechnic	No	-
12. Areva T & D New Zealand Limited	Private Training Establishment	No	-
13. Cyberwaka Training Academy	Private Training Establishment	No	-
14. DJC & Associates Ltd	Private Training Establishment	Yes	1-4 week block courses
15. Electec National College of Technology Limited	Private Training Establishment	No	-
16a. The Electrical Training Company Limited - Auckland	Private Training Establishment	No	-
16b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
17. The Energy Trainers Limited	Private Training Establishment	No	-
18. Transfield Services Training [New Zealand] Ltd	Private Training Establishment	Yes	Face-to-face learning, block course and distance learning without online support
19. Auckland University of Technology	University	No	-

**Number of accredited TEOs: 19**

**% of active accredited TEOs: 21%**

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**Table 10: Providers of NZQA Ref 1002: National Certificate in Telecommunications [Level 4]**

Accredited Institutions	Provider Type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
2. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
3. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
4. Manukau Institute of Technology	Polytechnic	No	-
5. Northland Polytechnic	Polytechnic	No	-
6. The Open Polytechnic of New Zealand	Polytechnic	No	-
7. Unitec New Zealand	Polytechnic	No	-
8. Wellington Institute of Technology	Polytechnic	No	-
9. Western Institute of Technology at Taranaki	Polytechnic	No	-
10. Whireia Community Polytechnic	Polytechnic	No	-
11. Areva T & D New Zealand Limited	Private Training Establishment	No	-
12. DJC & Associates Ltd	Private Training Establishment	Yes	Workplace assessment
13. Electec National College of Technology Limited	Private Training Establishment	No	-
14a. The Electrical Training Company Limited - Auckland	Private Training Establishment	No	-
14b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
15. The Energy Trainers Limited	Private Training Establishment	No	-
16. Transfield Services Training [New Zealand] Ltd	Private Training Establishment	Yes	Face-to-face learning, block course and distance learning without online support
17. Auckland University of Technology	University	No	-

**Number of accredited TEOs: 17**

**% of active accredited TEOs: 12%**

**Table 11: Providers of NZQA Ref 108: National Certificate in Telecommunications [Maintenance and Repair] [Level 4]**

Accredited Institutions	Provider Type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Areva T & D New Zealand Limited	Private Training Establishment	No	-
2. Auckland University of Technology	University	No	-
3. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
4. DJC & Associates Ltd	Private Training Establishment	No	-
5. Electec National College of Technology Limited	Private Training Establishment	No	-
8. Manukau Institute of Technology	Polytechnic	No	-
9. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
10. Northland Polytechnic	Polytechnic	No	-
11. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-

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Accredited Institutions	Provider Type	Active Provider?	Type of learning
12a. The Electrical Training Company Limited	Private Training Establishment	No	-
12b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
13. The Energy Trainers Limited	Private Training Establishment	No	-
14. The Open Polytechnic of New Zealand	Polytechnic	No	-
15. Transfield Services Training [New Zealand] Ltd	Private Training Establishment	No	-
16. Unitec New Zealand	Polytechnic	No	-
17. Wellington Institute of Technology	Polytechnic	No	-
18. Western Institute of Technology at Taranaki	Polytechnic	No	-
19. Whireia Community Polytechnic	Polytechnic	No	-

**Number of accredited TEOs: 19**

**% of active accredited TEOs: 0%**

**Table 12: Providers of NZQA Ref 102: National Certificate in Telecommunications [Management and Operations] [Level 4]**

Accredited Institutions	Provider Type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
2. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
3. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
4. Manukau Institute of Technology	Polytechnic	No	-
5. Northland Polytechnic	Polytechnic	No	-
6. The Open Polytechnic of New Zealand	Polytechnic	No	-
7. Unitec New Zealand	Polytechnic	No	-
8. Wellington Institute of Technology	Polytechnic	No	-
9. Western Institute of Technology at Taranaki	Polytechnic	No	-
10. Whireia Community Polytechnic	Polytechnic	No	-
11. DJC & Associates Ltd	Private Training Establishment	No	-
12. Electec National College of Technology Limited	Private Training Establishment	No	-
13a. The Electrical Training Company Limited – Auckland	Private Training Establishment	No	-
13b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
14. The Energy Trainers Limited	Private Training Establishment	No	-
15. Transfield Services Training [New Zealand] Ltd	Private Training Establishment	No	-
16. Auckland University of Technology	University	No	-

**Number of accredited TEOs: 16**

**% of active accredited TEOs: 0%**

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**Table 13: Providers of NZQA Ref 106: National Certificate in Telecommunications [Manufacture and Production] [Level 3]**

Accredited Institutions	Provider Type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Auckland University of Technology	University	No	-
2. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
3. DJC & Associates Ltd	Private Training Establishment	No	-
4. Electec National College of Technology Limited	Private Training Establishment	No	-
5. Manukau Institute of Technology	Polytechnic	No	-
6. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
7. Northland Polytechnic	Polytechnic	No	-
8. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
9a. The Electrical Training Company Limited	Private Training Establishment	No	-
9b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
10. The Energy Trainers Limited	Private Training Establishment	No	-
11. The Open Polytechnic of New Zealand	Polytechnic	No	-
12. Transfield Services Training [New Zealand] Limited	Private Training Establishment	No	-
13. Unitec New Zealand	Polytechnic	No	-
14. Wellington Institute of Technology	Polytechnic	No	-
15. Western Institute of Technology at Taranaki	Polytechnic	No	-
16. Whitireia Community Polytechnic	Polytechnic	No	-

**Number of accredited TEOs: 16**  
**% of active accredited TEOs: 0%**

**Table 14: Providers of NZQA Ref 109: National Certificate in Telecommunications [Manufacture and Production] [Level 5]**

Accredited Institutions	Provider type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Areva T & D New Zealand Limited	Private Training Establishment	No	-
2. Auckland University of Technology	University	No	-
3. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
4. DJC & Associates Ltd	Private Training Establishment	No	-
5. Electec National College of Technology Limited	Private Training Establishment	No	-
8. Manukau Institute of Technology	Polytechnic	No	-
9. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
10. Northland Polytechnic	Polytechnic	No	-
11. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
12a. The Electrical Training Company Limited - Auckland	Private Training Establishment	No	-
12b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-

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Accredited Institutions	Provider type	Active Provider?	Type of learning
13. The Energy Trainers Limited	Private Training Establishment	No	-
14. The Open Polytechnic of New Zealand	Polytechnic	No	-
15. Transfield Services Training [New Zealand] Limited	Private Training Establishment	No	-
16. Unitec New Zealand	Polytechnic	No	-
17. Wellington Institute of Technology	Polytechnic	No	-
18. Western Institute of Technology at Taranaki	Polytechnic	No	-
19. Whitireia Community Polytechnic	Polytechnic	No	-

**Number of accredited TEOs: 19**  
**% of active accredited TEOs: 0%**

**Table 15: Providers of NZQA Ref 107: National Certificate in Telecommunications [Planning and Design] [Level 4]**

Accredited Institutions	Provider Type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Auckland University of Technology	University	No	-
2. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
3. DJC & Associates Ltd	Private Training Establishment	No	-
4. Electec National College of Technology Limited	Private Training Establishment	No	-
5. Manukau Institute of Technology	Polytechnic	No	-
6. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
7. Northland Polytechnic	Polytechnic	No	-
8. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
9a. The Electrical Training Company Limited - Auckland	Private Training Establishment	No	-
9b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
10. The Energy Trainers Limited	Private Training Establishment	No	-
11. The Open Polytechnic of New Zealand	Polytechnic	No	-
12. Transfield Services Training [New Zealand] Limited	Private Training Establishment	No	-
13. Unitec New Zealand	Polytechnic	No	-
14. Wellington Institute of Technology	Polytechnic	No	-
15. Western Institute of Technology at Taranaki	Polytechnic	No	-
16. Whitireia Community Polytechnic	Polytechnic	No	-

**Number of accredited TEOs: 16**  
**% of active accredited TEOs: 0%**

**Table 16: Providers of NZQA Ref 255: National Certificate in Telecommunications [Research and Design] [Level 6] with strands in Electronics, Radio, Mechanical and Software**

Accredited Institutions	Provider Type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Auckland University of Technology	University	No	-
2. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-

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Accredited Institutions	Provider Type	Active Provider?	Type of learning
3. DJC & Associates Ltd	Private Training Establishment	No	-
4. Electec National College of Technology Limited	Private Training Establishment	No	-
7. Manukau Institute of Technology	Polytechnic	No	-
8. Naval Training - HMNZS Philomel	Government Training Establishment	No	-
9. Northland Polytechnic	Polytechnic	No	-
10. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	-
11a. The Electrical Training Company Limited - Auckland	Private Training Establishment	No	-
11b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
12. The Energy Trainers Limited	Private Training Establishment	No	-
13. The Open Polytechnic of New Zealand	Polytechnic	No	-
14. Transfield Services Training [New Zealand] Limited	Private Training Establishment	No	-
15. Unitec New Zealand	Polytechnic	No	-
16. Wellington Institute of Technology	Polytechnic	No	-
17. Western Institute of Technology at Taranaki	Polytechnic	No	-
18. Whitireia Community Polytechnic	Polytechnic	No	-

**Number of accredited TEOs: 18**

**% of active accredited TEOs: 0%**

**Table 17: Providers of NZQA Ref 104: National Certificate in Telecommunications [Sales and Service] [Level 3] with strands in Sales and Support**

Accredited Institutions	Provider Type	Active Provider?	Type of learning
Electricity Supply ITO	ITO	No	-
ETITO	ITO	Yes	Workplace assessment
1. Naval Training - HMNZS Philomel	Government Training Establishment	No	
2. RNZAF - Directorate of Air Force Training	Government Training Establishment	No	
4. Christchurch Polytechnic Institute of Technology	Polytechnic	No	-
5. Manukau Institute of Technology	Polytechnic	No	-
6. Northland Polytechnic	Polytechnic	No	-
7. The Open Polytechnic of New Zealand	Polytechnic	No	-
8. Unitec New Zealand	Polytechnic	No	-
9. Wellington Institute of Technology	Polytechnic	No	-
10. Western Institute of Technology at Taranaki	Polytechnic	No	-
11. Whitireia Community Polytechnic	Polytechnic	No	-
12. DJC & Associates Ltd	Private Training Establishment	No	-
13. Electec National College of Technology Limited	Private Training Establishment	No	-
14a. The Electrical Training Company Limited	Private Training Establishment	No	-
14b. The Electrical Training Company Limited - Rotorua	Private Training Establishment	No	-
15. Transfield Services Training [New Zealand] Limited	Private Training Establishment	No	-
16. Auckland University of Technology	University	No	-

**Number of accredited TEOs: 16**

**% of active accredited TEOs: 0%**

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**Table 18: Providers of NZQA Ref 1313: National Diploma in Engineering [Electrotechnology] [Level 6]**

Accredited Institutions [TEOs]	Provider type	Current Provider?	Type of learning
ETITO [Auckland]	Industry Training Organisation	No	
1. Christchurch Polytechnic Institute of Technology	Polytechnic	No	
2. Manukau Institute of Technology	Polytechnic	Yes	Full-time or part-time course at campus
3. Otago Polytechnic	Polytechnic	Yes	Full or part-time course or can be taken in a series of 2 week block courses
4. The Open Polytechnic of New Zealand	Polytechnic	No	
5. Universal College of Learning	Polytechnic	Yes	Full-time course at Palmerston North Campus, incorporates supportive e-learning
6. Wellington Institute of Technology	Polytechnic	Yes	Full-time learning, part-time options available
7. Auckland University of Technology	University	No	-

**Number of accredited TEOs: 7**  
**% of active accredited TEOs: 57%**

### APPENDIX 6: GLOSSARY OF TERMS

Some of the technical terms used in this report are described below. These descriptions are intended to provide the uninformed reader with a level of understanding about the issues described, rather than being offered as rigid definitions, as it is acknowledged there is often some debate as to the precise meaning of some of the terms.

- Bearer and Switch: equipment that allows transmission of information signals between network interfaces. The bearer is the equipment that boosts the signal to the cable that interconnects distant telephone exchanges. The switch is the equipment in the exchange that connects the subscriber depending on the number dialled
- Building & Data Cabling: a building's telecommunications cabling infrastructure that consists of a number of smaller elements that provide telecommunications service within the building
- Cabinet: an equipment casing containing the equipment required to operate a telecommunications network, often found on the roadside
- Customer Access Network: the part of the telecommunications network which connects subscribers to their service provider
- Customer Premises Equipment: any terminal and associated equipment located at a customer's premises and connected with a telecommunication channel
- Electronics: the branch of technology concerned with the development and application of circuits or systems using electronic devices
- ICT: according to the Organisation for Economic Cooperation and Development [OECD], the ICT industry can be defined as a combination of manufacturing and services industries that capture, transmit and display data and information electronically

From a telecommunications perspective, ICT can also be viewed as the infrastructure used to provide data and voice communications. This includes teleconferencing, ordinary phone calls and the transmission of files. This technology allows distant terminals to operate as if they were in one location.

- Local loop: the copper, fibre or radio link that connects the subscriber to the telephone exchange
- Local loop unbundling: the regulatory process of allowing multiple telecommunications operators use of connections from the telephone exchange to the customer's premises
- Private fibre network: an adjunct to other networks for information exchange
- Radio: a communication system based on broadcasting electromagnetic waves
- Telecommunications: the process of transmitting information over a distance by an electrical or electromagnetic medium
- VOIP [Voice Over Internet Protocol]: the technology used to transmit voice conversations over a data network using the Internet Protocol.
- WI-MAX: technology which enables the delivery of wireless broadband access as an alternative to cable and DSL