Working Group Brief

Mandatory Review of Information and Communication Technology (ICT) Qualifications

Prepared by NQS on behalf of the Steering Group

July 2013

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1. Summary

The working groups have been asked by the Steering Group for the ICT Qualifications Review to develop the proposed landscape of ICT qualifications, in preparation for 'approval to develop' submission to NZQA QAD in September 2013.

We recognise that work group members will have different levels of familiarity with the mandatory review of qualifications and the ICT qualifications review in particular. The introduction, background and landscape sections, along with the appendices, are intended to provide material that will 'set the scene' and provide all work group participants with information that can assist in their preparation for the work groups.

Section four of this brief is important as it covers the **key tasks for all working groups**. The critical task for the Working Groups is to complete the strategic purpose statement and outcome statement for the qualifications your group has been assigned. This consists of the:

- Strategic purpose statement
- Graduate profile
- Education pathway
- Employment pathway

We ask that you are all familiar with this section prior to the meeting. The facilitator for your group will be able to assist in the interpretation of the qualification requirements.

It would also be helpful if you are familiar with the NZQF level descriptors (appendix 1) particularly at the levels that relate to the range of qualifications your work group is tasked with developing.

Six working groups are being convened to develop the proposed suite of ICT qualifications, which are shown in appendix C.

Section five is important as it covers the **working groups**, and the proposed **qualifications that each work group is expected to develop**. We ask that you are all familiar with the section that relates to your workgroup prior to the meeting.

The workgroups are being convened in Wellington in July 2013, and dates for each work group are contained in section 5.
The start time on the first day of the two day meeting is 9.30am.

Venue: NZ Institute of Chartered Accountants (NZICA)
Address: Level 7, Tower Building, 50 Customhouse Quay, Wellington

 For further information or enquiries about the workgroups, please contact:

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- The review mailbox ictquals.review@nzqa.govt.nz.

We thank you all for contributing to the review and being involved in the working groups.

2. Introduction

The working groups have been asked by the Steering Group for the ICT Qualifications Review to develop the proposed landscape of ICT qualifications, in preparation for 'Approval to develop' submission to NZQA QAD in September 2013.

The ICT Review Working Groups will be expected to:

- develop New Zealand qualifications, in accordance with the advice and working brief provided by the ICT qualifications review Steering Group;
- provide feedback on the draft qualifications to the Steering Group;
- adjust the draft qualifications, following sector feedback, where appropriate;
- prepare the qualifications for Stage One of the review: *Application for Approval to Develop a Qualification.*

The working groups will operate in the best interests of the whole sector, acknowledging that members will have been appointed as coming from distinct parts of the sector. They will develop the strategic purpose statement, outcome statements and education and employment pathways for each qualification in accordance with:

- Guidelines for approval of qualifications at levels 1-6 for listing on the New Zealand Qualifications Framework, http://www.nzqa.govt.nz/assets/Studying-in-NZ/New-Zealand-Qualification-Framework/guidelines-listing-nzqf-applications.pdf , and
- NZQF levels criteria and qualifications types, http://www.nzqa.govt.nz/studying-in-new-zealand/nzqf/understand-nz-quals/ (copy of level descriptors included as appendix A)

Further information on mandatory deliverables associated with qualification reviews is attached as appendix B.

Key evaluative questions are asked in the evaluation of qualifications that are submitted for 'application to develop' and 'application to list' qualifications. It may be useful to be aware of the KEQs as workgrpups prepare the purpose statement and outcome statements for the qualifications their working group has been assigned.

There are two key evaluative questions (KEQs) applied to 'approval to develop' qualifications, and two KEQs for 'approval to list' the qualification on the NZQF.

The purpose of the work group meetings July 2013 is to prepare qualifications for stage 1 'approval to develop', and it may be useful to keep in mind the following KEQs:

1. How well has the need for the qualification(s) been established?
2. How well do the qualification's strategic purpose, graduate profile and general design address the identified needs of employers, industry and/or communities (i.e. relevant stakeholders)?

This means that the need for the qualification must be validly established at this first stage, and having established the need for the qualification, the question is around how well the qualification has been designed to purposefully respond to the validly identified and prioritised needs of relevant stakeholders.

The working group focus is on preparing the qualifications to meet the requirements of the second question. The needs analysis provides information to support the development of the qualifications. There are a range of sections that may directly assist the working groups in developing the qualifications.

It is proposed that work groups be reconvened at a later date to do more development work for the next stage. Once a qualification has been approved for development, the review then moves onto the 'approval to list' stage. At this second stage, there are two further KEQs.

3. To what extent does the qualification(s) design match the specific, validly identified needs of stakeholders?
4. How well does the qualification meet the overall requirements for listing on the NZQF?

The focus is about the qualification matching the specific needs of stakeholders, and the overall adequacy and readiness of the qualification design for delivering what it states, and being at a publishable standard. It may be useful to keep the KEQs inmind, but the KEQ 3 & 4 should not be the focus of this first development stage.

3. Background and landscape

The ICT qualifications review includes all ICT qualifications at levels 1-6 on the New Zealand Qualifications Framework (NZQF) nationwide. More information about the review is available at: http://www.nzqa.govt.nz/qualifications-standards/qualifications/information-and-communication-technology-qualifications/review-of-ict-qualifications/

Following investigations to determine needs for the sector, the Steering Group proposed a landscape of new qualifications which has been out for broad stakeholder consultation (a copy is available on the review webpage - *ICT qualifications mandatory review – draft qualifications landscape*). Feedback from the consultation has been considered when preparing the brief for working groups, and the landscape of qualifications that each working group is tasked with developing.

The landscape proposal considers qualifications that recognise generalist skills and knowledge relevant to many contexts, and also includes specialist areas to allow for separate credentialing in these areas. The proposal suggests two distinct streams – 'IT as a tool' computing qualifications (usage of computers and computing devices) and 'IT as a Profession' information technology qualifications (development towards professional IT roles). There is also a proposal to develop a 'bridging' transition qualification to enable people to gain skills to equip them for the more technical aspects required of the IT professional suite of qualifications.

The thirteen qualifications proposed for development are included in appendix C, and described below. The proposed qualifications may be slightly different from those outlined in the consultation document and expressions of interest paper that you have previously seen, as it incorporates changes made in response to the stakeholder feedback.

IT as a Tool

The proposed 'IT as a Tool' landscape has been designed to provide Certificates in Computing, with progression from fundamentals through to advanced user. These Certificates are expected to provide a good grounding in the use of computers, the Internet and other technology and devices.

The draft landscape proposes qualifications at Levels 2 through 4 for IT as a Tool:

- NZ Certificate in Computing (Fundamentals) (Level 2)
- NZ Certificate in Computing (Level 3)
- NZ Certificate in Computing (Advanced) (Level 4)

IT as a Profession

The proposed 'IT as a Profession' landscape has been designed to provide a solid grounding and introduction to the IT profession, and to prepare learners for further IT study. Diploma qualifications are expected to have a common core, and provide opportunities for specialisations in a range of IT areas, and/or to be completed as a more generalist qualification. There is also a bridging transition qualification proposed to provide a pathway for those with limited or no preparatory education such as digital technologies achievement standards at school, or little/no practical experience in IT. The proposed landscape includes three broad pathways – Information Technology, Information Systems, and Software Development.

The draft landscape proposes qualifications at Levels 3 through 6 for IT as a Profession:

- NZ Certificate in IT Essentials (Level 3/4)
- NZ Certificate in Information Technology (Level 5)
- NZ Diploma in Information Technology (Specialisations) (Level 5)
- NZ Diploma in Information Systems (Level 5)
- NZ Diploma in Web Development (Level 5)
- NZ Diploma in Software Development (Level 6)
- NZ Diploma in Info Tech (Specialisations) and/or Diploma in Specialisations (Level 6)
- NZ Diploma in Info Systems (Specialisations) and/or Diploma in Specialisations (Level 6)

The proposed information technology specialisations at level 5 include Networking, Computer Technician, Helpdesk and Tech Support. The proposed specialisms that may result from Information systems may include the more process-oriented side leading to roles in Business Analysis, IT Project Management, User Experience, and potentially Database Management.

The proposed specialisations at level 6 include Software Development; Systems and Network Administration; Software Implementation and Support; Database Management; and Information Systems specialisms/strands of Business Analysis and IT Project Management.

The principles used to arrive at the landscape are covered in the consultation document, and these are included as appendix D.

4. Key tasks for working groups

The critical task for the Working Groups is to complete the strategic purpose statement and outcome statement for the qualifications your group has been assigned. This consists of the:

- Strategic purpose statement
- Graduate profile
- Education pathway
- Employment pathway

These need to be written in a way that anyone can understand. **Prior to the meeting**, please familiarise yourself with the detailed requirements for each of these components which are listed on pages 14-17 of the *Guidelines for approval of qualifications at levels 1-6 for listing on the New Zealand Qualifications Framework*, http://www.nzqa.govt.nz/assets/Studying-in-NZ/New-Zealand-Qualification-Framework/guidelines-listing-nzqf-applications.pdf.

The underpinning premise of the mandatory reviews is to ensure that the proposed qualifications graduate profiles are sufficiently general and flexible enough to enable a range of programmes, in differing modes of delivery and contexts, to be developed, and still retain meaning for industry. ICT is a rapidly changing and dynamic industry, and working groups should use language that is generic enough to embrace emerging technologies. Where appropriate, this should allow providers to develop programmes towards qualifications that include vendor certifications if they wish.

This brief identifies which qualifications each working group is tasked with developing, and provides some information from the Steering Group to assist you. The qualification strategic purpose statement and outcome statements (includes the graduate profile, employment and education pathways) for each qualification will detail the distinctness of each in the proposed basket of new qualifications, and show the proposed linkages between them. The following is intended to provide some guidance when developing the qualifications.

1. **Strategic purpose statement** (why and for whom - supported with evidence)

   A strategic purpose statement identifies why the qualification should be on the NZQF. It must clearly identify the:
   - target group of learners
   - industry and/or community that will benefit from the qualification
   - standard at which the graduate will operate, within a defined scope of practice.

   The statement should also acknowledge the cultural and social aspirations of Māori, Pasifika and other communities, where these are reflected in the needs analysis.

   The needs analysis, this brief and landscape consultation documents may assist in defining this. Please note that while the qualifications are learner-centred, their justification must be in terms of national need. Think about…

- Why do we need this qualification?
- How can we justify it?
- For whom?
- How does it contribute to the needs of NZ today and into the future?

The Strategic Purpose Statement (SPS) may include language such as:

- The purpose of this qualification is to provide <industry or community> with individuals who have attained…..
- This qualification is essential because…

2. **Outcome Statement** (includes the graduate profile)

The outcome statement describes for a qualification what a person credited with the qualification will be able to do, along with relevant pathways.

- Graduate profile outcome statements (8-12) that reflect what a graduate can do, know and understand (skills, knowledge, understanding and attributes) in a range of contexts; describes the range of functions and/or scope of practice of the graduate. These should be written as an outcome focus - it may be helpful to think of what is achieved by application. These must be at the appropriate NZQF level – see descriptors at appendix A.

- Education pathways – to and from the qualification
  - E.g. This qualification provides a pathway for people wanting to …. Graduates may progress to….

- Employment pathways – types of positions a graduate will be prepared for.
  - E.g. Graduates of this qualification will have the skills and knowledge to work, or gain employment in a range of ….. roles in a variety of sectors. This may include….
- There may also be a community pathway for some qualifications.

3. **Other**

It is important to capture the thinking behind the development of the qualifications, and to note any comments that clarify the intent of the working group and/or any queries or suggestions that arise during the working groups. This may include noting any suggested compulsory elements, significant issues, conditions etc. Facilitators will record agreed feedback about linkages to vendor certifications and the intent behind the thinking of the working group so ideas are not lost; and any feedback from the working group to the steering group.

The Steering Group asks working group members to:

- work independently for the benefit of the sector as a whole rather than for an employer or any part of the sector
- contribute thoughtfully, constructively, and openly

- contribute to e-mail discussion/correspondence before, between, and after meetings as required
- attend for the two days (and when work groups are reconvened at later dates, if possible)
- collectively complete the outcome statement for each qualification by the end of the 2 day meeting

While working group members will not relitigate the Steering Group proposed qualifications or decisions around the landscape direction, there is provision to record any issues or concerns that arise during the development process. The working groups may take the opportunity to communicate their opinions and suggestions, by way of written contribution, following the working group.

5. Working Groups

On behalf of the Steering Group, NQS is convening **six working groups** to develop the proposed suite of ICT qualifications. The working groups and the proposed qualifications they are expected to develop are detailed below.

5.1 'IT as a Tool' Qualifications Working Group 1 – 30/31 July 2013

This group will look in detail at the outcomes and requirements for all "IT as a Tool" qualifications in the proposed Landscape. The "IT as a Tool" computing qualifications are designed to cover the usage of computers and other technology in a home, work or community setting. The focus is intended to be on the technical skills for using computers and other technology rather than non-technical (soft) skills.

The draft 'IT as a Tool' landscape has been designed to provide Certificates in Computing, with progression from fundamentals through to advanced user. These Certificates are expected to provide a good grounding in the use of computers, the Internet and other technology and devices.

The draft landscape proposes three qualifications at Levels 2 through 4 for IT as a Tool:
- NZ Certificate in Computing (Fundamentals) (Level 2)
- NZ Certificate in Computing (Level 3)
- NZ Certificate in Computing (Advanced) (Level 4)

NZ Certificate in Computing (Fundamentals) (Level 2)

This Certificate is intended to cover the fundamentals of computing, and may include concepts such as essentials tools to be a digital citizen and operate computers and other devices, including essential basics in productivity software and online activity.

NZ Certificate in Computing (Level 3)

This Certificate is intended to cover the effective use of productivity software essentials such as word, spreadsheets and presentation, and possibly the use of other applications such as web or image editing, database, and project or financial management software tools.

NZ Certificate in Computing (Advanced) (Level 4)

This Certificate is intended to look at more advanced use of productivity software and other tools and technical devices. It may provide opportunities for specializing in particular areas, and may consider including some aspects of 'IT as profession' preparation.

The sum of the three Certificates is likely to cover:
- Computers and Devices; ethics and professional standards
- Operating Systems, Printing, File management, Networks, IT Security;
- Web Browsing, Search, Communication, Email, Cloud Computing, Social Media, online Collaboration tools and Mobile;
- Base productivity software such as Word Processors, Spreadsheets, Presentation software and the use of Databases (all at basic then advanced levels);
- Concepts, practice and tools around editing online content including basic web design, text and images, as well as Computer-Aided Design (CAD) and how to plan for a design-related project.

Consideration can be given to whether these could align in some way with existing international certifications in this space, such as the *International Computer Driving Licence* (ICDL) run globally by the not-for-profit ECDL Foundation and Certiport *Internet and Computing Core Certification* IC3 programmes. It should also be noted that 'IT as a Tool' related learning appears in most of the Vocational Pathways, and whether consideration needs to be given to how this meshes with the proposed 'IT as a Tool' qualifications that are being developed.

The outcomes are expected to be written so that the qualification can be delivered and obtained in a range of contexts. They may also note or show linkages or pathways to international certifications.

The 'IT as a Tool' wokring group is being convened 30/31 July in Wellington.

'IT as a Profession' Working Groups (5) – meeting 2 days of 23/25 July 2013

Working group	Day 1 Tue 23 July	Day 2 Wed 24 July		Day 3 Thu 25 July
2. Transition level 3 and 4		Develop level 3 and 4		Develop level 3 and 4
3. Core Content	Develop core	Brief & Core	Refine core	
4. Information Technologies		Brief & Core	Develop specialisms	Develop specialisms
5. Information Systems		Brief & Core	Develop specialisms	Develop specialisms
6. Software Development		Brief & Core	Develop specialisms	Develop specialisms

The "IT as a Profession" Qualifications need to provide a solid grounding and introduction to the IT Profession. The suggested qualifications landscape has three broad pathways:

- **Information Technology**, covering the more technical aspects of the industry such as networking, technicians, and tech support including helpdesk functions.
- **Information Systems**, covering the more process-oriented side of the profession and leading into careers in Business Analysis, IT Project Management, UX and potentially Database Management.
- **Software Development**, implemented in various contexts and including later specialisation in Software Testing and Software Security.

The proposed landscape includes a bridging qualification to prepare learners for further IT study, an entry-level Certificate with an expectation of providing a common core and a taste of the range of IT options, and a suite of qualifications in the identified broad pathways.

5.2 Transition level 3 & 4 Qualifications Working Group 2 – 24/25 July

This group will consider the outcomes and requirements for the level 3 and/or 4 bridging to "IT as a profession" qualifications. This working group is being established to work alongside other "IT as a profession" groups post development of the core content. This will enable coherent pathway development and stair casing.

The landscape proposes one or two qualifications at Level 3 and/or 4 to provide a pathway to prepare learners for the 'IT as a Profession' range of qualifications – a NZ Certificate in IT Essentials.

NZ Certificate in IT Essentials (Level 3 or 4)

The *NZ Certificate in IT Essentials* is proposed as a bridging qualification for those with no or very little preparatory education such as the digital technologies achievement standards at school, limited or no practical experience in IT, or as a pathway from the 'IT as a Tool' Qualifications to the 'IT as a Profession' Qualifications.

It is proposed that this Certificate will cover the core concepts of IT and serve as an introductory course prior to the Level 5 qualifications. Under this model, those intending to continue on to the Level 5 Certificate or Diplomas but with no IT experience or background skills might complete this Certificate.

Some issues for the work group to consider include:

- who the targeted learners are, and what their specific needs may be
- what is required to prepare a learner for further study in 'IT as a profession'
- how the transition qualifications may align or be cohesive with the Digital Technologies NCEA achievement standards in schools; and
- how the Vocational Pathways that are part of the Youth Guarantee may fit with the proposed qualification. ICT as a profession/career is focussed in the Manufacturing and Technology Sector pathway, but is also apparent in other pathways. Consideration should be given to how the Manufacturing and Technology Sector Pathway may mesh with the proposed transition qualifications, although it is recognised that the proposed transition qualifications have a much broader audience for whom an NCEA qualification may not be entirely appropriate or desired.

5.3 IT as a Profession - Core content Working Group 3 – 23/24 July

This group will consider the core content requirements for the level 5 and 6 Diploma qualifications, and consideration of a Certificate at level 5 and level 6.

This work group meets the day before the other 'IT as a Profession' work groups, with the intention of 'completing' the core work on day 1 (Tuesday 23 July) and reporting back to the other groups first thing the next morning and obtaining input and suggestions for any changes.   Some members of this work group will join the other 'IT as a Profession' workgroups to ensure consistency, and to determine the best way to prepare the proposed Certificates at levels 5 & 6.

The core content is intended to be suitable for all Diploma qualifications, whether it be an Information Technology, Information Systems, or Software Development qualification pathways, and provide an introduction to each to ensure a well-rounded IT professional regardless of pathway chosen. As the outcome statements developed will be part of the other 'IT as a Profession' qualifications, there should be fewer and they should be worded to cluster appropriate core skills together. It is expected that core material is both a focus and integrated throughout the learning pathway.

Core outcomes are also expected to have a focus on soft skills such as communication, teamwork and problem solving, along with other soft skills and an understanding of ethics and professional practice. It is suggested that the level 6 common core may include a focus on Project Management and Security, being two areas identified as important from industry consultation. The level 6 core would also revisit ethics and professionalism in IT.

Section 6 of the needs analysis includes skills and competencies for the ICT sector, including soft skillsand core skills for work, which may be helpful to the work group. For the professionalism and professional knowledge aspects, some consideration may be given to the Institute of IT Professionals' Professional Knowledge Curriculum available at http://www.itcp.org.nz/files/PKCv1.pdf

NZ Certificate in Information Technology (Level 5)

The intention for the *Certificate in Information Technology* is to provide the foundational content for those wishing to practice within the field of IT regardless of pathway chosen, giving learners a taste of each area plus core. This might include the fundamentals of computing concepts and practice including basics such as installation and configuring PCs, Laptops and other devices, basic networking, configuring operating systems, email, and mobile devices, as well as introductory concepts of software development, communications and help desk and tech support.

A programme of study for this Certificate might align with [CompTIA A+ Certification](#), but with additional content around ethics, professional practice and organisational structure matters (such as that found in the Institute of IT Professionals' *Professional Knowledge Curriculum*), communication essentials, and a basic introduction to software development and information systems.

Those completing this Certificate under this model would have a clearer idea about which IT educational pathway to continue with, having been introduced to a range of areas to help determine a suitable IT specialization to progress to.

The Certificate is intended to meet the supply and demand needs of learners and industry in providing the short/sharp training that is required to enable learners to remain up to date in a sector that operates in an ever changing landscape. The intent is to produce a graduate profile that is sufficiently generic and flexible enough to enable a range of programmes and internationally recognised vendor certifications to be aligned to the certificate, through programme design.

5.4 IT as a Profession – Information Technologies and Specialisms Working Group 4 – 24/25 July

The membership of this group can form subgroups to develop the Information Technologies level 5 Diploma strands (such as networking, computer technician, Helpdesk and tech support); and the level 6 Diploma specialisms (Systems and Network Administration; Software Implementation and Support). This working group is being established to work alongside other "IT as a profession" groups post development of the core content. Some consideration of whether the separate level 6 Diplomas can be conflated into strands is an option that should be considered by the working group.

The Information Technology pathway contains more of the technical aspects of the profession such as networking, technician work and database administration. It is expected that core material is both a focus and integrated throughout the learning pathway, and the core workgroup will be developing this for inclusion in all level 5 & 6 Diplomas.

The draft landscape proposes **four qualifications** – a stranded diploma at level 5, and 3 level 6 diplomas for 'IT as a Profession' – Information Technology

- NZ Diploma in Information Technology (optional strands – Networking, Computer Technician, Help Desk & Tech Support) (Level 5)
- NZ Diploma in Systems and Network Administration (Level 6)
- NZ Diploma in Software Implementation and Support (Level 6)
- NZ Diploma in Database Management (Level 6)

Section 6 of the needs analysis includes skills and competencies for the ICT sector, including technical IT skills, which may be helpful to the work group.

NZ Diploma in Information Technology (Level 5)
(optional strands – Networking, Computer Technician, Help Desk & Tech Support)

The NZ Diploma in Information Technology is intended to provide options for the more technical aspects of the industry. Those who have started out on a Certificate pathway could progress to the full Diploma and begin specializing in one of several areas.

It is proposed that there be a stand-alone Diploma in Information Technology, with the option of one of three strands (*or more if evidence of need*):

- *Networking*, which might (for example) align to the CompTIA Network+ vendor certification;

- *Computing Technician*, more advanced concepts and practices around servicing computers and other technology;

- *Help Desk and Tech Support*, exploring communication and work flow concepts around help desks and providing tech support.

The Diploma in Information Technology is expected to cover all the areas above, and if an optional 'strand' is chosen it will have more depth in the particular area.

It is anticipated that the level 5 *NZ Diploma in Information Technology* will have some crossover with the Certificate in Information Technology core content and outcomes. Core outcomes are expected to have a focus on soft skills such as communication, teamwork and problem solving, along with other soft skills and an understanding of ethics and professional practice.

From a pathway perspective, learners might exit to industry as a computing technician, help desk or other support role having completed this Diploma or carry on to the more specialized Level 6 Diplomas.

NZ Diploma in Systems and Network Administration (Level 6)

NZ Diploma in Software Implementation and Support (Level 6)

NZ Diploma in Database Management (Level 6)

There are proposed pathways into the NZ Diploma in Database Management from both Information Technology and Information Systems, and this qualification is being developed by work group 5.

The working group can consider whether there is a need for specialism Information technology qualifications (as shown), or strands in a level 6 Diploma in Information Technology. It is suggested that Level 6 Diplomas have the NZ Diploma of Information Technology (Level 5) or equivalent knowledge and skills as recommended prior learning, and focus on extending the knowledge from the Level 5 Diploma in Information Technology into one of these three areas.

It is also suggested that the Diplomas include a common core extending the core from the Level 5 Diplomas and Certificate, and the 'core' working group will develop this.

Appendix 5 in the needs analysis outlines the Skills Framework for the Information Age (SFIA) – skills and competency description levels and sample definitions for IT specific roles. These include Computer technician, Helpdesk and technical support, network and systems administrator, implementation and Application Support, Associate/web developer.

Some issues for the work group to consider include:
- who the targeted learners are, and what their specific needs may be
- what is required to prepare a learner for further study in 'IT as a profession' info technology stream. This should include whether the level 5 Certificate is a suitable direct pathway into the level 6 Diplomas
- for *each* qualification, whether it would be more appropriate as a Diploma with strands or specialist Diploma, or a shorter and more specific Certificate
- what is 'core' to the IT stream and/or other streams (Info Systems, Software development) and is there anything that hasn't been captured by the core group
- what internationally recognised vendor qualifications may provide appropriate learning for the range of IT roles the proposed qualifications are designed to meet the needs of
- employment pathways, some of which are covered in more detail in appendix E.

5.5 IT as a Profession – Information Systems and related Specialisms Working Group 5 – 24/25 July

This group has membership which can form subgroups to develop the Level 5 & 6 Diploma in Information Systems, with strands or specialisms (Business Analysis, IT Project Management; Database Management). This working group is being established to work alongside other "IT as a profession" groups post development of the core content.

The Information Systems pathway is suggested as a pathway focusing primarily on process-related areas such as Business Analysis, Project Management and User Experience (UX). This may include some of the process components of software engineering. This will likely be a more attractive pathway for those less interested in the information technology or software development pathways who still want to enter the IT industry. There is evidence of a strong need for this in IT. It is expected that core material is both a focus and integrated throughout the learning pathway, and the core workgroup will be developing this for all level 5 & 6 Diplomas.

The draft landscape proposes **three qualifications** – general or stranded diplomas at level 5 and 6 for IT as a Profession – Information Systems; and the Diploma in Database Management that pathways from both Information Systems and Information Technology qualifications.

- NZ Diploma in Information Systems (possible strands – Business Analysis, Project Management, User experience [Ux]) (Level 5)
- NZ Diploma in Information Systems (possible strands – Business Analysis, Project Management, User experience [Ux]) (Level 6)
- NZ Diploma in Database Management (Level 6)

The Working Group should also consider whether these qualifications would be better as separate Diplomas, for instance a Diploma in Business Analysis and a Diploma in IT Project Management. Section 6 of the needs analysis includes skills and competencies for the ICT sector, including technical IT skills, which may be helpful to the work group.

NZ Diploma in Information Systems (Level 5)

It is proposed this Diploma will share a similar core to the Diploma in Information Technology, and branch into the less technical and more process-focused areas of the profession. A pathway similar to this would lead to areas of the profession in most demand. Three example areas that may be included would be Business Analysis, Project Management and User Experience (UX).

NZ Diploma in Information Systems (Level 6)

Following on from the Diploma in Information Systems, the needs analysis and industry analysis identifies a need for the qualifications framework to lead to more specialized Business Analysis and IT Project Management outcomes. This proposed Diploma is intended to meet that need.

The IT Project Management component is intended to address the need for more formal qualifications around Project Management from a clearly IT focus.

Industry feedback suggests that the needs of Project Management from the IT project context may be significantly different from 'general' project management, and that this is an area of need for the IT industry.

NZ Diploma in Database Management (Level 6)

There are proposed pathways into the proposed NZ Diploma in Database Management from both Information Technology and Information Systems. This qualification is to be developed by work group 5, but input may be obtained from work group 4 as well.

The working group can consider whether there is a need for a specialism qualification, or whether this can be a strand in a level 6 Diploma in Information Systems or Information Technology. It is suggested that Level 6 Diplomas have the NZ Diploma of Information Technology (Level 5) or NZ Diploma in Information Systems (Level 5) or equivalent knowledge and skills as recommended prior learning, and focus on extending the knowledge from the Level 5 Diplomas in to this area.

It is also suggested that the Diplomas include a common core extending the core from the Level 5 Diplomas and Certificate, and the 'core' working group will develop this.

Appendix 5 in the needs analysis outlines the Skills Framework for the Information Age (SFIA) – skills and competency description levels and sample definitions for IT specific roles. These include Computer technician, Helpdesk and technical support, network and systems administrator, implementation and Application Support, Associate/web developer.

Some issues for the work group to consider include:
- who the targeted learners are, and what their specific needs may be
- what is required to prepare a learner for further study in 'IT as a profession' info systems stream
- what is 'core' to the Information Systems stream and/or other streams (Info Tech, Software development) and is there anything that hasn't been captured by the core group
- what internationally recognised vendor qualifications may provide appropriate learning for the range of IT roles the proposed qualifications are designed to meet the needs of
- whether the proposed stranded qualifications should be split into separate specialisms; e.g. Diploma in IT Project Management; Diploma in Business Analysis; and whether the proposed Diploma in Database Management may be a strand rather than stand-alone qualification
- employment pathways, some of which are covered in more detail in appendix E.

5.6 IT as a Profession – Software Development Qualifications Working Group – 24/25 July

This group will look specifically at the Diploma in Software Development, and will also consider a Diploma in Web Development and whether this would be significantly different to the broader Diploma in Software Development. This working group is being established to work alongside other "IT as a profession" groups post development of the core content.

The Software Development pathway would pursue core concepts and practice around the development of software in multiple contexts. It is clear from industry consultation that a longer Diploma is required to prepare learners for a software development pathway. A potential need has also been identified for a web development and design qualification, and the working group is to consider whether this is significantly different to the broader Diploma in Software Development, and how best to meet this need.

The landscape proposes one two year Diploma in Software Development qualification at Level 6, and possibly a Diploma in Web Development at Level 5. The workgroup may suggest alternatives to meet the requirements from feedback, where there is evidence of need. It is expected that core material is both a focus and integrated throughout the learning pathway, and the core workgroup will be developing this for all level 5 & 6 Diplomas.

Section 6 of the needs analysis includes skills and competencies for the ICT sector, including technical IT skills, which may be helpful to the work group.

NZ Diploma in Web Development (Level 5)

The Diploma in Web Development is exploratory at this stage, and would be intended to include the core content common across all IT qualifications, then fork into more in-depth web software development combined with implementing a web design (e.g. usage of web CRM systems and basic HTML, CSS and scripting). This may be a qualification that covers concpets and execution of web and interface design, plus the implementation of this through CRM type systems and mark-up language such as HTML, style sheets etc.

Sector feedback has identified there may be a need for a one year qualification in web development at Level 5, and the working group is to consider this in more detail. It is proposed that this qualification include some design principles but primarily focus on the 'back end' web development with some 'front end' web design, and include implementation.

NZ Diploma in Software Development (Level 6)

The Diploma in Software Development is intended to include the core content common across all IT qualifications, then fork into more in-depth software development theory and practice.

The Diploma is intended to be sufficiently generalised to enable a course to focus on one of several contexts such as (for example) general Application Development, Web Development, Games Development, Mobile Apps Development, or other areas that may emerge in the future.

A qualification with strands is not being suggested – rather, the outcomes, skills and attributes might be identical for these contexts, just applied in a different manner. Industry consultation makes it clear that a graduate at this level should still be considered a generalist or "associate" developer.

Some issues for the work group to consider include:
- who the targeted learners are, and what their specific needs may be
- what is required to prepare a learner for further study in 'IT as a profession' software development
- what is 'core' to software development stream and/or other streams (Info Tech, info systems) and is there anything that hasn't been captured by the core group
- what internationally recognised vendor qualifications may provide partial learning for the range of software development associate type roles the proposed qualifications are designed to meet the needs of
- whether two separate one year Diplomas (level 5 and level 6) may meet identified needs, and if so whether realistic employment pathways exist for both
- employment pathways, some of which are covered in more detail in appendix E.

Education pathways to level 7

Whilst the intent is to ensure there is an employment pathway for graduates of the 'IT as a Professional' range of Diplomas, there is also an expectation they may pathway into degree qualifications.

Level 7 qualifications are outside the scope of this review. However, level 7 qualifications that may provide education pathways from the proposed qualifications include:

- NZ Certificate or Diploma in Software Testing (Level 7) – from NZ Diploma in Software Development
- NZ Certificate or Diploma in Software Security (Level 7) – from NZ Diploma in Software Development
- NZ Certificate or Diploma in IT Security (Level 7) – from any of the proposed NZ Diplomas, but more likely from an operating systems and networking pathway
- Bachelor degrees

6 Meeting venue

The workgroups are being convened in Wellington in July 2013.

Venue: NZ Institute of Chartered Accountants (NZICA)
Address: Level 7, Tower Building, 50 Customhouse Quay, Wellington

For further information or enquiries, please contact Diana Garrett at 04 463 3057 or via the review mailbox ictquals.review@nzqa.govt.nz.

Appendix A: NZQF Level Descriptor Table

The table below provides a detailed description of each level in terms of learning outcomes, using common domains and dimensions of progression. Knowledge, skills and application describe what a graduate at a particular level is expected to know, do and be. The term application encompasses responsibility, behaviours, attitudes, attributes and competence.

More information is available onunderstadnig NZ qualifications, including purpose and outcomes of Certificates and Diplomas for each level, at:
http://www.nzqa.govt.nz/studying-in-new-zealand/nzqf/understand-nz-quals/

Level	KNOWLEDGE	SKILLS	APPLICATION
1	Basic general and/or foundation knowledge	Apply basic solutions to simple problems Apply basic skills required to carry out simple tasks	Highly structured contexts Requiring some responsibility for own learning Interacting with others
2	Basic factual and/or operational knowledge of a field of work or study	Apply known solutions to familiar problems Apply standard processes relevant to the field of work or study	General supervision Requiring some responsibility for own learning and performance Collaborating with others
3	Some operational and theoretical knowledge in a field of work or study	Select and apply from a range of known solutions to familiar problems Apply a range of standard processes relevant to the field of work or study	Limited supervision Requiring major responsibility for own learning and performance Adapting own behaviour when interacting with others Contributing to group performance
4	Broad operational and theoretical knowledge in a field of work or study	Select and apply solutions to familiar and sometimes unfamiliar problems Select and apply a range of standard and non-standard processes relevant to the field of work or study	Self-management of learning and performance under broad guidance Some responsibility for performance of others
5	Broad operational or technical and theoretical knowledge within a specific field of work or study	Select and apply a range of solutions to familiar and sometimes unfamiliar problems Select and apply a range of standard and non-standard processes relevant to the field of work or study	Complete self-management of learning and performance within defined contexts Some responsibility for the management of learning and performance of others
6	Specialised technical or theoretical knowledge with depth in a field of work or study	Analyse and generate solutions to familiar and unfamiliar problems Select and apply a range of standard and non-standard processes relevant to the field of work or study	Complete self-management of learning and performance within dynamic contexts Responsibility for leadership within dynamic contexts

7	Specialised technical or theoretical knowledge with depth in one or more fields of work or study	Analyse, generate solutions to unfamiliar and sometimes complex problems Select, adapt and apply a range of processes relevant to the field of work or study	Advanced generic skills and/or specialist knowledge and skills in a professional context or field of study
8	Advanced technical and/or theoretical knowledge in a discipline or practice, involving a critical understanding of the underpinning key principles	Analyse, generate solutions to complex and sometimes unpredictable problems Evaluate and apply a range of processes relevant to the field of work or study	Developing identification with a profession and/or discipline through application of advanced generic skills and/or specialist knowledge and skills Some responsibility for integrity of profession or discipline
9	Highly specialised knowledge, some of which is at the forefront of knowledge, and a critical awareness of issues in a field of study or practice	Develop and apply new skills and techniques to existing or emerging problems Mastery of the field of study or practice to an advanced level	Independent application of highly specialised knowledge and skills within a discipline or professional practice Some responsibility for leadership within the profession or discipline
10	Knowledge at the most advanced frontier of a field of study or professional practice	Critical reflection on existing knowledge or practice and the creation of new knowledge	Sustained commitment to the professional integrity and to the development of new ideas or practices at the forefront of discipline or professional practice

Appendix B: Mandatory deliverables

Requirements and guidelines

All qualifications must be consistent with the general listing requirements outlined in Section 3 of The New Zealand Qualifications Framework.

New qualifications at Levels 1-6 must also meet the requirements outlined in Section 4 of this document, if they are to be listed on the NZQF.

NZQA offers guidelines for approval of qualifications at Levels 1-6 for listing on the NZQF.

To assist qualification developers in considering their approach to managing consistency, NZQA has a discussion paper on ensuring consistency of qualification outcomes.

Summary of requirements for application to develop qualifications

Approval to develop a qualification

Applications for approval to develop a qualification must include the following information and evidence:

- Qualification title, type, level and credit value
- New Zealand Standard Classification of Education (NZSCED) code (it may also include the Directory of Assessment Standards classification)
- A statement of strategic purpose
- A qualification outcome statement (including graduate profile, and education and employment pathways)
- Identification of any duplication with existing qualifications on the NZQF
- Explanation of need for qualification and evidence of confirmation of need
- The Stakeholder Profile for the qualification
- Description of stakeholder involvement and evidence of support
- Name and legal status of the qualification developer

The process and templates for submitting applications to NZQA can be found on the NZQF page of the NZQA website.

Listing qualifications on the NZQF[1]

Qualification developers must seek approval to develop and list qualifications on the New Zealand Qualifications Framework (NZQF) from the relevant quality assurance body.

The development of New Zealand qualifications at Levels 1-6 and their subsequent listing on the NZQF involve two distinct stages.

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[1] NZQA website http://www.nzqa.govt.nz/studying-in-new-zealand/nzqf/listing-qualifications-on-the-nzqf/

1. Application to develop

Initially, developers apply to NZQA for approval to develop a qualification. This stage ensures all new qualifications are relevant and do not duplicate those already on the NZQF.

NZQA requires the following forms and information at this stage:

- NZQF1 - Application for Approval to Develop a Qualification at Levels 1-6
- NZQF2 - Involvement in Pre-Development Stage Stakeholder Attestation

Along with:

- a needs analysis, and
- evidence showing how decisions were made, so the quality assurance body analyst can understand how agreement was reached on the qualification detail – "the story".

To report results of the qualifications review process, complete and submit:

- NZQF5: Report of the Qualifications Review
- NZQF6: Outcomes of a Qualifications Review: Changing the status of current qualifications
  Qualification owners need to complete NZQF6 to confirm their acceptance of the proposed new suite of qualifications arising from the review.

About stakeholder attestations

Stakeholder attestations are required from all stakeholders directly involved in the qualification development. They provide evidence of the support for the qualifications and the extent of collaboration and involvement by stakeholders.

Link to: details about submitting an application for approval to develop a qualification.

2. Application for approval

The second stage occurs once the qualification has been developed and involves applying for NZQA approval. Once approved, that qualification is listed on the NZQF.

To submit an application for approval of a qualification, the following forms must be completed and information provided:

- NZQF3 - Application for Approval of a Qualification at Levels 1-6
- NZQF4 - Involvement in Qualification Development Stakeholder Attestation

Link to: details about submitting an application for approval of a qualification.

Once a qualification is registered on the NZQF, an institution that proposes providing a programme of study or training that leads to the newly listed qualification must apply to NZQA for approval of the programme. Details on programme approval and provider accreditation are available on the NZQA website, including new guidelines.

Appendix C: Proposed ICT Qualifications Landscape

NZQF Level	IT as a Tool		IT as a profession					
1		1						
2	NZ Certificate in Computing Fundamentals	2						
3	NZ Certificate in Computing	3	NZ Certificate in IT Essentials					
4	NZ Certificate in Computing (Advanced)	4	NZ Certificate in IT Essentials					
5		5	NZ Certificate in Information Technology					
			NZ Diploma in Information Technology (optional strands)					
			NZ Diploma in IT (Networking)	NZ Diploma in IT (Computer technician)	NZ Diploma in IT (Help desk & tech support)	NZ Diploma in Information systems		NZ Diploma in Web Development
6		6	NZ Diploma in Systems and Network Administration	NZ Diploma in Software Implementation and support	NZ Diploma in Database Management	NZ Diploma in Info Systems (Business Analysis)	NZ Diploma in Info Systems (IT Project Management)	NZ Diploma in Software Development
7		7	*NZ Cert/Dip in IT Security*					*NZ Cert/Dip in Software Testing OR Software Security*

Appendix D: Principles as defined in proposed landscape consultation

In making this proposal, the Steering Group suggests qualifications and a structure that as far as possible meet the needs of a wide range of learners, employers and other stakeholders. The approach is intended to be flexible for learner pathways and responds to:

- Issues identified in the analysis of current qualifications and their use

- Needs identified in the needs analysis

- The needs of specific groups of learners:
    - students wanting to gain a full ICT qualification prior to entering the workforce (domestic, international, secondary/tertiary, full time/part time, Maori, Pasifika);
    - employees wanting to gain a full ICT qualification i.e. those already in the workforce, who may be employer sponsored or part time self-funded learners;
    - people seeking employment who might need specific IT skills and/or to improve digital literacy, to enter an ICT or other business environment. May be second chance learners, upskilling or re-training adults;
    - employers and SME owners wishing to improve productivity and profitability of their business (may be upskilling themselves or employees, gap filling, mentored);
    - Communities wanting to reduce the technology literacy gap, providing opportunities to develop digital skills as a key aspect of life skills.

- Initial feedback from industry and provider surveys around roles and skill requirements

- Alignment and cohesion with the existing Digital Technologies NCEA Achievement Standards in schools

- Alignment with ongoing professional education in the industry

- Consideration of mapping IT professional qualifications to an international skills framework such as the Skills Framework for the Information Age - SFIA

The proposal includes qualifications that recognise generalist skills and knowledge relevant to many contexts, and also includes specialist areas to allow for separate credentialing in these areas. The proposal suggests two separate streams – 'IT as a tool' computing qualifications and 'IT as a Profession' information technology qualifications. There is also a proposal to develop a 'bridging' or transition qualification to enable people to gain skills to equip them for the more technical aspects required of the IT professional suite of qualifications.

Appendix E: Education and Employment Pathways in Brief

This section outlines how the suggested qualifications framework might align with the main graduate roles for those graduating from Certificates and Diplomas. These roles were developed following significant industry consultation.

Note that these roles relate to the "IT as a Profession" group only.

The roles covered in this section include:

1 Computing Technician

2 Helpdesk and Technical Support Officers

3 Network/Systems Administrators

4 Implementation and Application Support Officers

5 Database Administrator

6 Software Developer (Associate level)

7 Business Analyst

8 IT Project Manager

9 Software Testing Professional

10 IT Security Professional

The Review Team has considered these example roles in more detail, defined using the SFIA Framework, and this detail is included in the needs analysis. However, the following roles are provided here to provide examples of educational and employment pathways.

1 Computing Technician

Technicians diagnose, repair, install, assemble and maintain computers and technology devices. This might include hardware, peripherals, software and other equipment.

A Computing Technician at this level would generally deal with computers and devices in a home or small office environment as well as basic networking and in some cases SME network/server support. A technician may also work under supervised conditions in a larger office or network environment. There is some crossover between a senior technician and a Systems Administrator.

Under the suggested model, a Computing Technician would complete the Level 5 Diploma in Information Technology (Computing Technician).

2 Helpdesk and Technical Support Officers

Helpdesk and technical support officers often provide the first line of support, usually by telephone and internet/email.

As well as providing basic technical support on software, installations, hardware or other relevant areas, helpdesk and technical support teams must document issues and resolutions. Verbal and written communication skills are of paramount importance.

Under the suggested model, this role might require the level 5 Diploma in Information Technology (Help Desk and Tech Support).

3 Network/Systems Administrators

Network and Systems Administrators maintain networks and operating systems, ensuring well functioning and secure information systems. In a Cloud Computing environment, network and system administrators are responsible for monitoring performance and conducting maintenance of a Cloud environment.

Network Administrators generally deal with the functioning and security of networks whereas Systems Administrators are concerned with operating systems and other infrastructure.

Someone pursuing this role might start with the proposed Level 5 Diploma of Information Technology (Networking) then also complete the Level 6 Diploma in Systems and Network Administration.

4 Implementation and Application Support Officers

An Implementation and Application Support role provides assistance during the installation or upgrade of systems or applications.

Implementation and Application Support roles will often conduct client-side or cloud-based installation, setup, training and early support for bespoke or other software and resolve any issues that might arise.

Someone pursuing this role might start with the proposed Level 5 Diploma of Information Technology (Networking or Computer Technican) then also complete the proposed Level 6 Diploma in Software Implementation and Support.

5 Database Administrator

A database administrator (or DBA) is a person responsible for the installation, configuration, upgrade, administration, monitoring and maintenance of databases in an organisation.

The role includes the development and design of database strategies, system monitoring and improving database performance and capacity, and planning for future expansion requirements. They may also plan, co-ordinate and implement security measures to safeguard the database.[2]

Someone wanting to pursue this career path might complete the proposed Level 6 Diploma in Database Administration, following either the proposed Level 5 Diploma in Information Technology or Diploma in Information Systems.

6 Software Developer (Associate Level)

A Software Developer at the Diploma level designs, codes, tests, corrects, and documents simple programs, and assists in the implementation of software which forms part of a properly engineered information or communications system.

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[2] Source: http://en.wikipedia.org/wiki/Database_administrator

It should be noted that there is likely to be a differential between someone completing this Diploma, versus a Bachelor level qualification in Software Development or Engineering.

Based on industry feedback, it is proposed that a software developer would complete a minimum two-year Diploma in Software Development, and the proposed Level 6 Diploma in Software Development is intended to meet this need.

7 Business Analyst

A Business Analyst (BA) is an internal consultancy role that has responsibility for investigating business systems, identifying options for improving business systems and bridging the needs of the business with the use of IT.

Under the suggested model, an aspiring Business Analyst would complete the proposed Level 6 Diploma in Business Analysis following the Level 5 Diploma in Information Systems.

8 IT Project Manager

A Project Manager has responsibility for the planning and execution of a project, in this case specifically within the context of IT Projects.

Industry consultation has shown a clear need for a focus on Project Management, especially within the IT context.

Under this suggested model, a specialist IT Project Manager would complete the proposed Diploma in IT Project Management at Level 6, following completion of the Diploma in Information Systems.

9 Software Testing Professional

Testing Professionals conduct detailed and systematic testing of software to ensure it meets requirements, works as expected, can be implemented consistently and satisfies the needs of stakeholders.

It is suggested that a Testing Professional would complete the Diploma in Software Testing, following on from the Level 6 Software Development diploma.

10 IT Security Professional

Depending on the type of security role, a security professional might come through a software or hardware/IT pathway in the proposed model, going on to complete either the IT Security or Software Security Level 7 qualifications.

Note that security considerations would also be a key factor in all other IT-related qualifications.