Project: Climate Change Competency and Certification - discussion paper

Client: Environment Institute of Australia and New Zealand

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ENVIRONMENT INSTITUTE OF AUSTRALIA AND NEW ZEALAND

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Executive summary

As evidence of climate change rises and climate change policy in Australia and New Zealand is developed and implemented the need for competent professionals and practitioners grows.

International organisations are developing certification programs that are being adopted mainly for greenhouse gases (GHG) auditors and processes. The US-based GHG Management Institute and ECO-Canada offer GHG professional certification using defined competencies.

The authors of this paper undertook research to find similar certification programs either for other climate change mitigation initiatives or for climate change adaptation but none were found.

Australia and New Zealand currently have no formal climate change competency or certification programs in place. Programs are limited to Australia's *National Greenhouse and Energy Reporting Act 2007* (NGER) auditor registration of GHG emissions, which was established mainly to satisfy international agreements.

The Environment Institute of Australia and New Zealand (EIANZ) is well-placed to coordinate competencies and certification of professionals because it has developed proficiencies and certification for environmental professionals. The Institute created a Special Interest Section to focus on certification and developed good contacts and agreements with key climate change stakeholders. It proposes a comprehensive process of proficiency and certification development and implementation.

Other professions have proficiencies and certification processes that range from limited to very detailed. Deciding the most efficient and effective will require research and consultation.

This discussion paper introduces the drivers for certification, explains the status of certification and makes 21 recommendations for further research and consultation before committing to a course of action.

1.0 Introduction

Most mature professions are based on a system of certification of their practitioners. Certifying practitioners ensures high standards of professionalism that clients can rely on.

Quality certification is underpinned by recognised competencies.

Recognising this need within its own practitioner base, the Environment Institute of Australia and New Zealand's Climate Change Special Interest Section (EIANZ CCSIS) requested EnviroPartners (EP) to prepare a discussion paper on establishing and certifying competencies or proficiencies (proficiencies) for practitioners in climate change. This is termed the Climate Change Competency and Certification (CCCC) Project

Australia's carbon economy is developing rapidly, so EIANZ is well placed to address the needs of competency. The Institute has these assets:

- a business plan for 2011/12 that specifically addresses climate change certification (EIANZ Climate Change Special Interest Section, July 2011)
- strong links to the Certified Environmental Professional (CEnvP) program and CEnvP Board (www.cenvp.org) which EIANZ set up
- a Staged Training for Environmental Practitioners (STEP) program that includes agreed environmental proficiencies and a framework for assessment, mentoring and Continuous Professional Development (CPD) (EIANZ & EnviroPartners, STEP Phase 1 Implementation, 2009) and (EIANZ & University, Professional Development for Environmental Practitioners, 2008)
- specialist proficiencies / competencies for ecologists within STEP and to achieve CEnvP (www.cenvp.org)
- a membership with wide professional skills and interest in environmental sustainability
- links to, and agreements with, the federal government through the Department of Climate Change and Energy Efficiency (DCCEE); a leading national human resource body, Environmental Careers Organisation Canada (ECO Canada); a practitioner body, Australian Institute of Environmental Accountants (AIEA); and an environmental accreditation / certification body, the CEnvP Board.

Further steps need to be taken: some context and careful scoping are necessary to focus on what certification process will be most effective and efficient for Australian and New Zealand practitioners.

Based on this situation, this discussion paper was prepared for comment and then for use in consultation. After this process, the discussion paper will be finalised to guide development of climate change proficiencies and a certification process that will serve Australia and New Zealand going forward.

1.1 Background

This discussion paper addresses an important segment of EIANZ's member and climate change practitioner needs: their proficiency to work in the climate change sector and verification of that proficiency.

In 2007, EIANZ surveyed members about climate change, among other sectors. The members responded that they felt ill-equipped to tackle climate change as practitioners (EIANZ, 2008).

The federal Department of Climate Change funded EIANZ to run a climate change training program from 2008 to 2010. This program did not include competency-based training or certification because neither existed. As a result, by the end of 2010, 863 practitioners had received training but none of it was competency based.

EIANZ was one of the few professional bodies to run training for practitioners; most training was aimed at university courses (DCC & Change, 2008).

Despite having no certification or competencies, EIANZ members and practitioners have been providing climate change advice and support. An industry was evolving without the necessary checks and balances.

However, at this time, EIANZ had started to develop environmental proficiencies in its STEP program and had a mature environmental certification program (CEnvP).

EIANZ recognised deficiencies in professional support for its members working in climate change and created a CCSIS with a mandate to address the lack of proficiency and certification in climate change.

This paper reviews the status of proficiency and certification to determine whether they have changed and how EIANZ can assist in bringing better professional standards to climate change management.

1.2 Scope limitations

Climate change policies and responses are evolving rapidly; therefore it is not possible to cover all permutations.

This discussion paper gives a snapshot of the technical scope of climate change and the drivers to manage climate change before focusing on climate change proficiencies and certification. It does not evaluate all forms of proficiency, certification processes or tools for lessons and benchmarks.

It focuses on professionals and practitioners, rather than processes and products.

In terms of climate change science and management, most focus is on specifically GHG international and national efforts and their management. Other mitigation, such as energy management, is addressed briefly and climate change adaptation very briefly.

Stakeholder engagement was limited to that referenced and the EIANZ CCSIS Executive. Wider consultation and potential partnerships are proposed.

1.3 Definitions

Definitions vary from source to source. Some are from EIANZ's existing training programs, e.g. EIANZ STEP 2009 **(EIANZ & EnviroPartners, STEP Phase 1 Implementation, 2009)**; some from internationally-recognised climate change sources, e.g. United Nations Framework Convention on Climate Change glossary **(UNFCCC, Glossary),** some from international standards, e.g. ISO/IEC 17000:2004 *Conformity assessment -- Vocabulary and general principles* and some to suit the intent of this paper. For the purposes of this discussion paper, definitions are given below.

Climate change impacts on environmental, social and economic systems can be understood in terms of sensitivity, adaptation and vulnerability of the system, where:

- ***Sensitivity*** is the degree to which a system will respond to a change in climatic conditions
- ***Adaptation*** is the degree to which adjustments are possible in practices, processes or structures of systems to projected or actual climatic changes
- ***Vulnerability*** is the extent to which a system may damage or harm a system depending on its sensitivity and adaptability

Climate change mitigation describes the environmental, social and economic measures that are intended to limit, control or mitigate emissions that cause climate change.

Climate change management is a collective term for climate change mitigation, energy management and adaptation.

Climate change practitioner refers to any person who performs climate change-related work activities in any of the following functional areas of mitigation and adaptation practice: policy development and implementation; planning and assessment; environmental surveys and indicators, design and construction; operation and management; monitoring and reporting; legislation, regulation, or enforcement; auditing; research; and education and community awareness.

Proficiencies include the knowledge and skills that enable a person to perform effectively the activities of a given occupation or to function to the standards expected in employment. Example: The ability to analyse climate change data, interpret it and present results is a **competency**, whereas the ability to utilise climate change spatial data analysis tools such as GIS and remote sensing would be a specific **proficiency**.

Enabling proficiencies are those which may be common to many professions and are critical to climate change proficiencies and competencies. Examples include communicating effectively, critical thinking, leading/influencing others, learning and creativity, computer proficiency, and work ethic. (Some may best be acquired and assessed by a particular discipline or specialisation e.g. stakeholder engagement)

Generic climate change proficiencies relate to climate change-related proficiencies that all climate change professionals should have, irrespective of their area of specialisation. Examples include climate change awareness and data analysis and assessment.

Specialised climate change proficiencies are those specific to climate change. Examples include climate change science.

Early-career environmental professional (ECEP) refers to a person holding at least an environment-related undergraduate degree and with up to five years experience in a functional area of environmental practice (public/private/academic sector). The term includes but is not limited to young professionals because it also covers mature professionals from other professions moving into the environment sector.

Experienced professional refers to a professional with at least five years of work experience in a functional area of environmental practice, including Certified Environmental Practitioners (CEnvPs) or professionals of equivalent standing.

Staged Training for Environmental Practitioners (STEP) refers to the EIANZ program initiative for ECEPs.

Mentoring is a mutually beneficial relationship that involves a more experienced person helping a less experienced person to identify and achieve their professional goals and deal with work or career-related problems. Mentors include work supervisors and self-organised arrangements as well as ‘independent’ mentors (through EIANZ or other programs); in some cases two or more mentors may be appropriate.

Continuing Professional Development (CPD) refers to practitioners' ongoing commitment to extend, update, deepen and broaden their knowledge and skills to perform their job effectively, meet their obligations to the community and maintain the currency of their skills and knowledge in the context of the rapidly changing and expanding knowledge base and technology that impact on climate change practice. It includes formal training such as courses leading to formal qualifications, short courses, workshops and seminars and also activities such as networking (e.g. involvement in committees, mentoring), private study, publication of technical or research papers, lecturing, industry involvement (for academics), and other on-the-job experiences. CPD can include specific on-the-job development (additional to normal work tasks) as well as extra-curricular activities.

Accreditation is the process of verifying the competency and registering certifiers and auditors.

Certification is the sign-off that the work meets the required standards. Certification is often undertaken by the person responsible for delivering the work. It is also third-party attestation related to products, processes, systems or persons.

Audit is an independent check or evaluation by an external (third) party, by the customer or buyer (second party) or by an internal (first) party to ensure that the work complies with the standards as certified.

1.4 Method

A comprehensive process of engagement, development, consultation and negotiation befits the importance of climate change and having appropriately skilled practitioners that EIANZ members are seeking. EIANZ has the capability, though does not recommend, a shorter process if necessary. The overall methodology of the CCCC Project is to:

1. Broadly identify certification stakeholders, research their proficiency needs and processes
2. Draft this discussion paper
3. Seek comments and workshop the paper with key stakeholders, e.g. EIANZ's September 2011 conference, DCCEE / Department of Resources, Energy and Tourism (DRET)
4. Finalise the discussion paper
5. Seek funding for climate change certification
6. Form key stakeholder steering group connected to EIANZ CCSIS
7. Develop options paper
8. Use options paper to canvass views more broadly, e.g. survey, workshops
9. Agree preferred option with key stakeholder group
10. Develop the certification process, including proficiencies, with stakeholder group
11. Resource and launch the climate change certification process

This discussion paper addresses steps 1-4 that will be used for steps 5-11. This draft addresses only steps 1 and 2 as follows.

1.4.1 Stakeholders and research

Research was based on the author's experience of proficiencies and certification. Stakeholder engagement was limited to discussions with those noted in the discussion paper.

1.4.2 Discussion paper format - initial

Understanding context helps define the subject and enables scoping. The first part of the paper introduces climate change. Climate change science that underpins climate change management is usually divided into mitigation and adaptation. The science has been developed over the last 40 years whereas management is more recent and is evolving fast.

The second part discusses legal and administrative drivers at all levels in society and the economy. Some drivers and levels are connected, some not. Business drivers in terms of incentives, penalties, risk, opportunity and behaviours are also discussed.

The focus of proficiencies is on professionals and practitioners in climate change mitigation and adaptation. Typically, proficiencies will be standard enabling proficiencies, generic proficiencies and specialised proficiencies (see examples in Attachment A).

Proficiency must also to apply to the climate change process and ultimately to a product or outcome, i.e. whether climate change has been managed satisfactorily. Although practitioners should follow a rigorous process that delivers tangible outcomes, this does not always happen. Many processes are complex and may not guarantee positive outcomes. For example an emissions trading scheme might be so complex that lawyers, consultants and regulators get caught up in the detail and the scheme never delivers its aim of mitigating climate change. Hence process and product/outcome proficiencies and their certification processes cannot be ignored. They already exist for other sectors, and this discussion paper does touch on these when discussing certification.

Certification usually assesses proficiencies against criteria and requires maintenance often by continuous (professional) development. The certification part of this paper starts with accreditation – the process of verifying certifiers – and then recognises some certification tools where specifically applied in climate change.

Finally, the discussion paper discusses prospective partners to participate in taking proficiencies and certification further.

1.5 Disclaimer

EnviroPartners has prepared this discussion paper with the usual care and thoroughness of the professional consultant for the sole use of EIANZ CCSIS. Only this party has been authorised by EnviroPartners to make use of the material, quote from it or rely on it in any way.

The report's recommendations are based on generally recommended standards and practices current at the time of its preparation. No other warranty, expressed or implied, is made as to the professional advice included in this report.

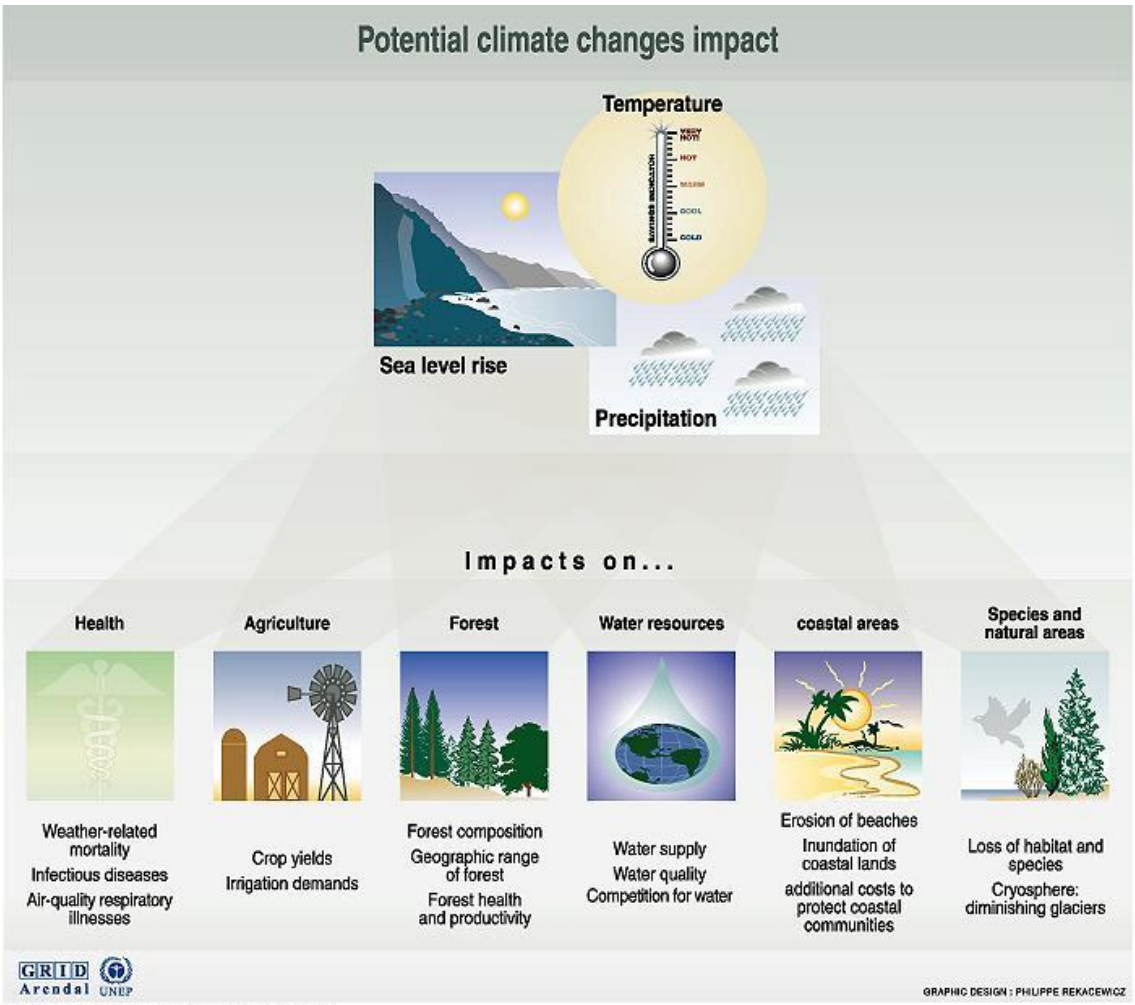
The methodology and sources of information used by EnviroPartners are outlined in this report. EnviroPartners has made no independent verification of this information beyond the agreed scope of works and EnviroPartners assumes no responsibility for omissions or inaccuracies.

2.0 Discussion points

2.1 Technical scope

Climate change science is about understanding why climate changes, how those changes impact ecological systems (including human lives) and how we respond to or mitigate the GHG emissions that cause changes.

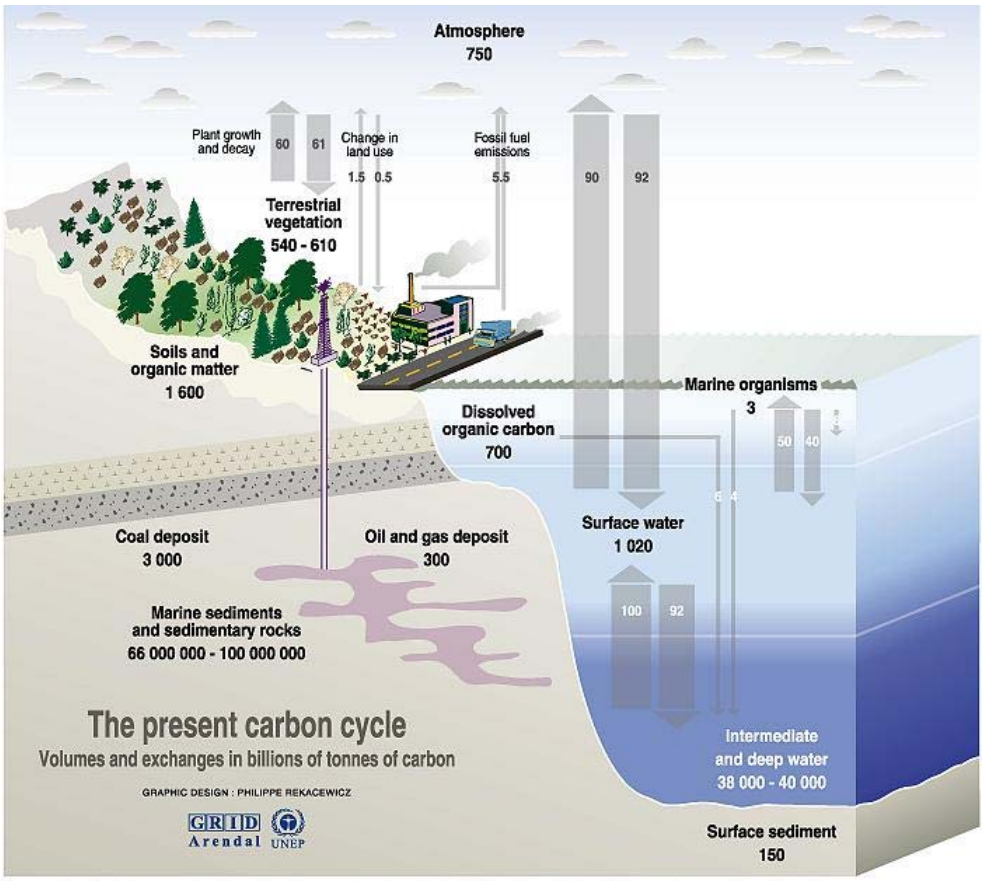
The first two steps are represented in the diagram below. Typically, scientists will assess changes in temperature, precipitation and sea-level rise enabling many disciplines to adapt to the impacts shown. Sensitivity and vulnerability (see 1.3 Definitions), e.g. changes in conditions, will accentuate or reduce impacts. Skills required may be technical in the areas/sectors shown, or cross-disciplinary, e.g. legal, policy, land-use planning, economic, social, emergency services etc.



Source: United States environmental protection agency (EPA).

Figure 1. The science of climate change

The third step, mitigation, may be represented by the carbon cycle below. Mitigation is about limiting GHG emissions and maximising uptake of GHG. Energy management is tightly linked to this activity. Again, technical or cross-disciplinary skills may be required and limiting GHG emissions from point sources requires technical and data management skills.



Sources: Center for climatic research, Institute for environmental studies, university of Wisconsin at Madison; Okanagan university college in Canada, Department of geography; World Watch, November-December 1998; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge press university, 1996.

Figure 2 Mitigation of climate change

For simplicity, understanding the science (step 1) may be separated from climate change management (steps 2 and 3). Later in the discussion paper, management will be dissected into impact management (step 2 adaptation) and step 3 mitigation.

2.2 Legal and administrative drivers

The international, national, state and local legal and administrative drivers for climate change science and management are each considered briefly in this section.

2.2.1 International

The Intergovernmental Panel on Climate Change (IPCC) plays a central role in coordinating the physical science and modelling potential impacts, in assessing vulnerability and adaptation to climate change and creating response scenarios to mitigate climate change. IPCC drives international and national initiatives. The IPCC's 5th Assessment Report (AR5) is underway – AR4 was launched in 2007 – and will be completed over 12 months from late 2013 to late 2014 (IPCC, Home).

The United Nations Framework Convention on Climate Change (UNFCCC) seeks international consensus on emission limits against national GHG inventories and on international mitigation and adaptation initiatives to address those limits. The next annual Conference of the Parties (COP) will be held in South Africa (28 November to 9 December 2011) where it will continue the debate, seeking targets and specifically address what follows the Kyoto Protocol that concludes in 2012 (UNFCCC, Home).

Standards, codes and guidelines are other important drivers. International Organization for Standardization (ISO) has developed ISO 14064:2006 series for GHG accounting, reporting and verification, 14065:2007 for use in accreditation, ISO 14066:2011 for GHG teams and plans, ISO 50001 for energy management and ISO 14067 for product carbon footprinting. There are also GHG protocols and Carbon Trust Standards. For details of key standards see Sections *2.4 Proficiencies* and *2.5 Certification processes and tools*.

2.2.2 National

Most countries, including Australia and New Zealand, are addressing climate change in some form and recognise IPCC data, UNFCCC agreements and international standards and apply them to their region.

Australia reports its commitments under Kyoto and UNFCCC using an inventory devised under the *National Greenhouse and Energy Reporting Act 2007* (NGER). Assurance may be provided by auditors registered under a NGER regulatory framework (DCCEE, National Greenhouse and Energy Reporting, 2010).

In July 2011, Australia released a Clean Energy Bill, to be enacted by the end of 2011, that proposed a carbon tax to commence in July 2012 that would, in turn, lead to an emissions trading system due to commence July 2015 (DCCEE, Clean Energy Legislative Package, 2011). The intent is to build on the Renewable Energy Target (more than 20% electricity supply from renewable energy sources by 2020) and *Energy Efficiency Opportunities Act 2006* by creating financial incentives for low emissions technologies. A Carbon Farming Initiative (CFI) that commenced in September 2011 will form part of the Clean Energy package.

New Zealand also reports against its commitments under Kyoto and UNFCCC. Reports are peer reviewed (Environment, Greenhouse Gas Reports). Its *Climate Change Response Act 2002* enabled a broad-based emissions trading system (ETS) to commence in 2008 that has just been reviewed. The ETS review will decide implementation beyond 2012. Effectiveness and efficiency were mentioned in the terms of reference, but proficiencies or certification were not specifically included and are not in the review report (Environment, Building the ETS, 2011).

Under New Zealand's many climate change regulations, verification of data is required but the regulations merely refer users to Australia's 3rd party verification (Environment, Climate Change Regulations, 2008; Environment, Climate Change Regulations, 2008)

New Zealand also has the *Energy Efficiency and Conservation Act 2000* and a Permanent Forest Sink Initiative.

No specific national legislation in either Australia or New Zealand applies to adaptation. Some initiatives are being considered by central government that seek consistency across Australian regions (Hopkins, 2011), e.g. *Draft AS5334 Climate Change adaptation for settlements and infrastructure*, but most work is left to regional authorities. New Zealand's Ministry of Agriculture and Forestry has a Sustainable Land Management and Climate Change Plan of Action and toolbox that address adaptation (Forestry, 2010).

2.2.3 States, Territories and Regional Councils

The middle tier of government in Australia and New Zealand translates certain national initiatives to the region and develops and implements its own climate change adaptation and mitigation policies to suit the region.

For example, in Queensland, an Office of Climate Change addresses both mitigation and adaptation, an Office of Clean Energy addresses mitigation, the Department of Local Government and Planning addresses regional climate change planning instruments and other departments manage specialised climate change services, e.g. Department of Employment, Economic Development and Innovation manages farming.

Earlier in 2011, floods in South East Queensland and Cyclone Yasi – two impact events likely to increase under Climate Change scenarios – received whole of government attention.

Proficiencies must reflect those at national level and be broad or general or suit the service or speciality at the regional and local levels.

2.2 4 Local government / territorial authorities

Local governments in Australia and territorial authorities in New Zealand are often responsible for land use planning and therefore climate change adaptation (e.g. coastal erosion defences) and mitigation to a lesser extent (e.g. building solar systems and energy standards).

The staff from Ku-ring-gai Council, NSW, for example, compared and allocated scores to an Australian Greenhouse Office model and an International Council for Local Environmental Initiatives (ICLEI) model for decision-making in local government climate change adaptation planning (Scott & Weston, 2011). Although both models were deemed to be flawed, the lICLEI model scored higher. Proficiency of the models – two processes – was considered, rather than the required level of the user's proficiency in either model or assurance of the product / outcome.

Proficiencies may be similar to those at higher levels of government, the main difference is that they are applied to local users' needs, e.g. land use planner, ratepayer and developer.

2.3 Business drivers

Understanding penalties, incentives and risks helps users decide the importance of overall proficiencies, the importance of some over others and certification for business.

2.3.1 Penalties and incentives

Like all new technologies and social change, it will probably take time for climate change management to be adequately and consistently applied; however incentives and penalties can be used as a means of improving uptake and performance.

Governments recognise the need to apply a 'push–pull' approach to change behaviour. Pushing by imposing standards such as NGER (with penalties for non-compliance) can result in general compliance. Pulling with incentives such as carbon tax / ETS can improve overall performance beyond the requirements of a standard, e.g. Australia's 5% reduction in GHG emissions by 2020.

Incentives are designed to encourage good practice whereas penalties are intended to discourage poor practice. Understanding this difference is important for the role that proficiencies and certification may play in climate change management — whether the emphasis should be on developing approaches to facilitate good climate change outcomes, e.g. policy and funding, or on providing mechanisms to penalise poor climate change outcomes, e.g. regulation, prosecutions and fines.

As the importance of climate change rises, penalties and incentives are also likely to rise.

2.3.2 Risk

Risk assessment and management prioritises issues to determine what should be controlled, and when and how.

Risk assessment

Risk assessment, e.g. under ISO 31000:2009 or ICLEI, considers the probability and exposure (likelihood) of a hazard occurring and its consequences. However, risk assessment does not lend itself to climate change except for use by the big emitters and for the most vulnerable / sensitive.

In most adaptation cases, risk assessment is like emergency response assessment: low likelihood and high consequence, where:

- exposures may be limited, in the future and uncertain, e.g. cyclone hazard in a new area;
- probabilities are rare, e.g. number of cyclones, and;
- consequences are dire, e.g. cyclone intensity cause significant economic, social and environmental damage

Assessing the risk of emissions is similar. The likelihood is certain, e.g. a motor vehicle emitting GHG, but the individual consequences may be deemed minor, e.g. the contribution of one vehicle. Somehow, communication of the small cumulative effects by the many and their links to unintended consequences elsewhere must be addressed.

The role of incentives and penalties, e.g. risk of prosecution or loss of market opportunity, upgrades the risk to a higher priority requiring management.

Risk management

The higher the risk the more important it is to manage the risk. If a risk is assessed as sufficiently high, something needs to be done to control the hazard. A hierarchy of control is often suggested — starting at 'avoidance' of the risk, and moving to 'managing' the risk as a last resort. A hierarchy of control should be applied to climate change and avoidance (mitigation) preferred over impact management (adaptation) and a number of steps in between. The hierarchy can also emphasise opportunities and enhance values.

For climate change, if the hazards are increasing (e.g. IPCC projections), and the risks are rising (e.g. incentives and penalties on top of the projections) the importance of competency / proficiency and certification to assess and manage risks will also rise.

If risks rise, prioritisation on identification and application of appropriate management practices to the specific situation should ideally rise in tandem.

In tandem with these business drivers, a certification scheme could then apply not only to practitioners, but also to processes and/or products.

2.3.3 Behavioural

Understanding what makes people change their behaviours and applying techniques to encourage change are important drivers that could apply to climate change. Examples in Australia recently are the advertisement and political campaigns for and against a carbon tax (Government, 2011).

It is also encouraging that a behavioural management profession such as the Australian Psychological Society has a position statement about the psychology of climate change with recommendations, (see Section 10, to assist (Society, 2010)

Behavioural motivations may be important drivers for climate change but are not necessarily found explicitly in proficiencies or certification processes. Exceptions may be described as enabling or transferable proficiencies, such as may be found, for example, in leadership, lateral thinking and marketing proficiencies.

2.4 Proficiencies

This section focuses on proficiencies for practitioners and professionals.

Links between economic sectors, environmental domains, administrative agencies and time scales call for integrative systems analysis (PMSEIC, 2010) and ultimately the underpinning skills. EIANZ has Position Statements on for example the environmental domains of Climate Change, Energy and Water (EIANZ, Position Statements, 2011). The state of knowledge and cost/benefits may require a focus on core proficiencies for all practitioners and for carbon, energy and climate change, then branch from there to another more specific domain (such as water-related in flooding, coastal erosion, storm surge etc.)

The broader issues of certification are covered in the next section.

2.4.1 Science

Work on climate change science has been undertaken for many decades and uses internationally recognised methods of data verification.

For example, IPCC has selected 800 authors from over 3000 nominations for AR5 (IPCC, Home). How authors, supporting editors and working group members are selected is not clear. IPCC uses peer-reviewed data and, after some criticism of data in AR4, its 33rd session has recently decided to tighten data verification processes and procedures (IPCC, IPCC 33rd session, 2011).

2.4.2 Mitigation

Skills sought to manage GHG emissions have been broadly discussed in Section 2.1.

The first sectors targeted for mitigation are large emission point sources of GHGs (e.g. power stations). Their contributions in terms of tonnes CO_2-e are measurable and controllable by a definable process of verifiable data gathering and verification skills. Smaller, non-point source, fugitive and dispersed GHG sources, e.g. from soil, will require similar data skills but will be more difficult to manage.

The international prognosis for emissions data gathering may include one of the following scenarios:

Table 1 Possible international framework scenarios: 2012-2020

	Scenario		
Parameter	**1. Legally binding multilateral framework**	**2. International political accord**	**3. Medium-term uncertainty**
Monitoring, reporting and verification	Detailed common accounting rules. Reporting and verification at multilateral level.	A mix of common and nationally-determined accounting rules. A level of reporting and verification at multilateral level which is at least equivalent to UNFCCC general obligations.	A mix of common and nationally-determined accounting rules. Reporting and verification at multilateral level for developed countries, under UNFCCC general obligations.

NZ ETS review 2011

A number of international standards apply to GHG data:

- AS ISO 14064.1 – *Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals.*
- AS ISO 14064.2 – *Specification with guidance at the project level for quantification and reporting of greenhouse gas emission reductions and removal enhancements.*
- *The Greenhouse Gas Protocol - A Corporate Accounting and Reporting Standard*
- *The Greenhouse Gas Protocol - The GHG Protocol for Project Accounting*

The international standard for competency is *ISO 14066:2011 Competence requirements for greenhouse gas validation teams and verification teams*. It defines team competencies that are not linked to a particular program. It includes principles (7 off), knowledge competencies (GHG program, technical area, auditing and leadership), skills / competencies (11 off underpinning) and recognises sectors, e.g. agriculture.

Australia's existing NGER auditor registration does not use defined competencies or proficiencies **(DCCEE, Greenhouse and Energy Auditor Registration Guidelines, 2010)**. It uses qualifications, professional standing, audit experience, assurance, leadership and NGER knowledge that many audit certifiers apply, e.g. RABQSA. These, in effect, may map to ISO 14066 competencies. A Clean Energy Regulator, proposed in the Clean Energy package, will manage NGER – and CFI -auditors **(DCCEE, Clean Energy Legislative Package, 2011)**. How the regulator will manage CFI is yet to be defined.

The Australian Auditing and Assurance Standards Board (www.auasb.gov.au) (AUASB) is working with the International Auditing and Assurance Board (IAASB) on an Australian assurance standard that will reflect draft *ISAE 3410 Assurance Engagements on GHG Statements*, January 2011. It describes competencies in terms of understanding and knowledge (A17) and for complex engagements additional scientific, engineering and information systems expertise (A18). The New Zealand Accounting Standards Board (*NZASB*) is equivalent.

No research was done on proficiencies that may be required for other mitigation and energy schemes, e.g. renewables.

New Zealand does not have a specific system and refers to Australia's as raised in Section 2.2.2 above.

No mitigation proficiencies were found that had been developed by professional or practitioner associations in Australia or New Zealand. Some maybe, e.g. the Caron Market Institute (Institute C. M., 2011) are developing standards.

In 2004, EIANZ set up a board to certify environmental professionals (CEnvP) and in 2010 two specialist categories were launched (CEnvP). Impact assessment does not use specific proficiencies, whereas ecology uses six from the EIANZ STEP program. Proposed proficiencies under the STEP program, some of which apply to ecology and all lead to CEnvP status, are shown in Attachment A. Proficiencies may be adaptable to serve climate change practitioners.

Other OECD country / regional systems worthy of summary are those of the European Union and Canada,

The European co-operation for Accreditation provides guidance to verifiers of the European Union's ETS (Accreditation, 2010). It refers to technical and generic auditor competencies (6.1.1 and 6.1.2), leaving it up to the verifier to develop them.

ECO-Canada, founded in 1992 and one of 30 government-initiated sector Councils addressing Human Resource challenges for Canada's economy, focuses on the environment industry **(**www.eco.ca). It has developed (competency) standards for GHG verifiers (98 off) and GHG Quantifiers (85 off) aligned to ISO 14064/14065/14066 **(ECO-Canada, 2011)**. The competencies combine knowledge, skills and personal attributes to test demonstrated behaviours. Examples are:

- Technical competencies, e.g. GHG quantification, leadership in GHG;
- Transferable competencies, e.g. critical thinking; and,
- Core knowledge, e.g. how business works in relation to GHG.

An Australian and New Zealand scheme of data verification will need to be responsive to international trends and understand the link of evolving science to mitigation targets, and then applying mitigation.

2.4.3 Adaptation

Skills sought to manage climate change impacts have been discussed in Section 2.1. They are wide-ranging and are broadly technical, economic, social, environmental and political. These may be the skills typically used in impact assessment and then management (Wilkinson, 2011) (Crawley, 2011). An example may be the Environmental Assessment and Management process used for Climate Change and applied by the Great Barrier Reef Marine Authority (Smith, 2011).

As an example, the potential or actual impact of climate change, e.g. a cyclone, may:

- be assessed, e.g. community vulnerability against climate sensitivities,
- decide impact mitigation solutions defined and conditioned, e.g. policies, emergency response, and,
- form the basis for the implementation of, and adaptation to the impact, e.g. apply building codes, disaster management

Proficiencies for adaptation were not researched for this document. It is likely that federal and state governments are aware of the status of such proficiencies, e.g. applying AS5334.

EIANZ has an active impact assessment SIS that has created a certification for an impact assessment professional under the CEnvP certification process. Certification is not measured against specific proficiencies (CEnvP).

2.5 Certification processes and tools

The previous section addressed practitioner proficiencies; this section initially broadens perspectives and then narrows the discussion around certification.

Accreditation bodies will accredit bodies to certify:

- practitioners / professionals, e.g. ECO-Canada,
- processes, e.g. ISO 14064 on GHG; and,
- products, e.g. ISO 14067 *Carbon Footprint of products* (due in 2012).

Rather than attempt to cover all three certification options, it is reasonable to initially cover one component until our understanding of climate change matures. Perhaps the optimum choice is to certify people who have demonstrated expertise in process, e.g. incentives, penalties and risks (See sections 2.2 and 2.3), and experience of outcomes. However, some disciplines do cover all three options, e.g. ULDA's self certification process for development assessment (ULDA, 2011).

Therefore, the focus here is on people and on the supporting process, not specifically on processes or products / outcomes. It also applies to experiences in Australia and New Zealand and then to a lesser extent in certain OECD countries.

2.5.1 Australia and New Zealand

Australia and New Zealand have many formal and informal certification processes. Those most relevant to climate change are discussed below. Other schemes may offer good benchmarks. No attributes of any are evaluated.

Joint Accreditation System of Australia and New Zealand (JAS-ANZ), in agreement with Australian and New Zealand governments, is the main accreditation body with responsibility for accrediting certification bodies that, in turn, certify people, processes, i.e. management systems and products and inspection bodies (JAS-ANZ, JAS-ANZ, 2007-11).

JAS-ANZ with other accreditation bodies and through the International Accreditation Forum (IAF) applies consistent accreditation requirements for the application of ISO 14065, *Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition* (JAS-ANZ, GHG Validation and Verification, 2007-11). In New Zealand, CarboNZero was the first accredited body and so is Verification NZ Ltd. In Australia, NCSI and SGS are accredited (JAS-ANZ, Accredited Bodies, 2007-11). A search of the website did not reveal certified organisations or indeed persons accredited to AS/ISO 14064.1, 14064.2 or the Greenhouse Gas Protocols, though they do exist (Abraham, 2011). For example, Leighton Contractors Pty Ltd was certified by SAI Global to ISO 14064.1:2006 on 3/3/11 (Global, 2011).

JAS-ANZ accredits certifiers of practitioners to ISO/IEC 17024:2003 *General requirements for bodies operating the certification of persons,* and the 2011 version is likely to be clearer about proficiencies (Abraham, 2011).

ISO 50001 Energy Management Systems has been released in 2011 and is likely to be applied in a similar way as the ISO 9001 suite of management system standards (Abraham, 2011). It will be about a process, embedded within which will be an assurance of practitioner skills.

The Australian federal government registers NGER Auditors in a de facto certification scheme and the proposed Clean Energy Regulator will decide auditor accreditation / certification (DCCEE, Clean Energy Legislative Package, 2011). AUSAB and its role in the Australian version of *ISAE 3410 Assurance Engagements on GHG Statements* - that would apply to NGER - is uncertain.

It is unclear whether New Zealand's ETS review will recommend certification processes. It is not in the report (Environment, Building the ETS, 2011).

For professionals, EIANZ has a well established certification process to CEnvP, managed by the CEnvP Board. Likewise, engineers, land use planners, accountants etc. have their respective processes. For example, The Institute of Chartered Accounts (www.charteredaccountants.com.au) has a Chartered Accountants Program that requires most Accountants to complete a Graduate Diploma and have requisite experience (ICA, 2010).

For environmental practitioners, the newly formed Australian Institute of Environmental Accountants (AIEA) has a mandate to develop accounting principles and apply them to environmental reporting and specifically initially to NGER (AIEA).

Aside from these government and professional / practitioner bodies, commercial organisations provide certification and support services.

For example, RABQSA has well established competency and qualification-based certification processes for auditors, e.g. competency as a certified Environmental Systems auditor underpins a certified Wind Farm Australia auditor. Competency is determined by a RABQSA examiner in an audit situation. Knowledge, qualifications, work and audit experience and personal attributes also apply (RAB-QSA).

Further examples are SAI Global, Lloyds. NCSI, that offer certification for processes, e.g. ISO 14001, and provide GHG training, e.g. NCSI on GHG Management Institute courses (NCSI) and SAI Global on ISO 14064 courses (Martinez, 2011). Note that the NCSI course is certified to ISO 14064, whereas the SAI Global was not.

2.5.2 Other countries

Other OECD country / regional systems worthy of summary are those of the European Union, Canada and USA.

The European Co-operation for Accreditation (EA) provides guidance to verifiers for the European Union's ETS and in Chapter 6 provides specific guidance on verifying auditor competence (Accreditation, 2010).

The USA-based GHG Management Institute - a not-for-profit organisation founded in 2007 - trains and supports GHG professionals in GHG measurement, accounting, auditing and management (Institute, Who we are, 2008-11). The Institute has international reach, e.g. developing courses for UNFCCC, offers certificates, e.g. *GHG Accounting*; offers e-courses, e.g. *302 GHG Accounting for Forest and other Land Use Projects* and has an international Committee on Professional Competency Requirements to guide development.

GHG Management Institute and ECO-Canada have come together to offer an Environmental Professional in Greenhouse Gas - EP(GHG). Professional status is in two stages:

1. full professional for those with over 5 years experience in GHG; and,
2. in training EPt(GHG) for less than 5 years (Institute, Professionals, 2008-11).

2.6 Stakeholders and potential partnerships

The proliferation of stakeholders in climate change is immense, changing and growing.

An understanding of key stakeholders for climate change services upon which proficiencies and certification could be based would help ensure that their needs will be met. Some attempt was made during the preparation of this discussion paper to identify stakeholders and research their needs.

Organisations with profile in climate change and in proficiencies and certification are fewer. These are identified throughout this paper. Their identities and proposed roles are:

- IPCC – explain its role in proficiencies and certification
- DCCEE – workshop this discussion paper to address targeted recommendations and provide support for this project
- DRET – explain energy and decide the extent to which it should or should not support this project
- NZ ETS – consult on paper and provide support for this project
- AUASB / NZASB – explain their evolving roles, separate to ISO, and possibly provide support on developing standards
- JAS-ANZ – support this project with advice
- CEnvP board – involve in any decisions on proficiencies and certification and support this project
- EIANZ IA SIS – consult on climate change adaptation
- AIEA – develop a relationship with EIANZ CC SIS on proficiencies and certification in the environmental accounting sector
- ECO-Canada – use the MOU with EIANZ to develop a relationship on proficiencies and possibly on certification
- GHG Institute – develop a relationship with EIANZ CC SIS, possibly on GHG certification and for training
- RABQSA – consult on potential certification models

Others that may need to be included and their proposed role are:

- Department of Education, Employment and Workplace Relations (www.deewr.gov.au) – provide funding under Australia's Clean Energy Skills Program to develop a full certification process
- The Climate Institute (www.climateinstitute.org.au) – consult on paper and provide support to this project
- ClimateWorks (www.climateworksaustralia.org) – consult on paper and research assistance with a methodology in mitigation (perhaps adaptation)
- Climate Market Institute (www.carbonmarketinstitute.org) – consult on paper and developing professional standards to inform accreditation in the carbon market
- Association of Climate Change Officers (www.ACCOonline.org) – develop a relationship with EIANZ CC SIS to work together to advance skills for climate change practitioners
- The Institute of Environmental Management and Assessment (www.iema.net) – consider developing a relationship with EIANZ, as it has a similar vision, is a large professional body that serves, among others auditors and assessors, including in GHG
- The International Register of Certified Auditors (http://www.irca.org) - consider developing a relationship with EIANZ, as it certifies and trains Energy auditors among others.

- The Australian Psychological Society (www.psychology.org.au) – develop a relationship with EIANZ CC SIS to ensure proficiencies and certification processes recognise behavioural and psychological drivers
- Research bodies in climate change such as USC (http://climatechange.edu.au/) and others linked to climate change such as the Australia – United States Climate, Energy and Water nexus (ANU, 2011) – extend (USC) and develop (ANU) relationship with EIANZ CC SIS for researching proficiencies and their improvements and assist where there may be unintended consequences (say in water or biodiversity).

A number of commercial organisations may be able to provide supporting CPD, e.g. NCSI.

3.0 Conclusions and recommendations

Conclusions and summary of recommendations for further investigation on climate change proficiencies and certification are given below.

3.1 Proficiencies

Climate change proficiencies exist only for GHG, not for science, other mitigation solutions or adaptation. Assessment criteria were not identified.

For the GHG sector, proficiencies range from being basic, e.g. for the NGER auditor scheme, to being very detailed, e.g. as proposed by ECO-Canada's. In the middle is ISO 14066.

The NGER auditor scheme may evolve, with proficiencies expanding to map fairly easily to ISO 14066 and thus may need to link to CFI. It could also seek to quantify proficiencies. This is likely to be decided by the Clean Energy Regulator.

Recommendation 1: EIANZ CCSIS discusses with 1) DCCEE how the NGER auditor scheme (and assessment criteria) may evolve, and then 2) with the Clean Energy Regulator once setup.

ECO-Canada's technical competency definition roughly equates to EIANZ STEP's Enabling proficiencies that would apply to a Discipline (in this case GHG). Transferable competencies equate to Generic proficiencies and Core knowledge to some of EIANZ's Enabling proficiencies that are General in nature.

Recommendation 2: EIANZ CCSIS liaises with ECO-Canada about its GHG competencies and assessment criteria and their potential to map to EIANZ STEP

Recommendation 3: EIANZ CCSIS explores opportunities of some convergence on the regulatory and ECO-Canada solutions above.

No proficiencies were explored for science, for other mitigation solutions or for adaptation.

Recommendation 4: EIANZ CCSIS confirms with IPCC that climate change science is likely to continue to use peer reviewed data and unlikely to use proficiencies unless science overlaps with climate change management.

Recommendation 5: EIANZ CC SIS confirms with UNFCCC that it is not seeking competencies or certification, leaving it to other International bodies.

Recommendation 6: EIANZ CCSIS seeks support from DRET about the prospects of proficiencies (and certification) for other climate change mitigation and energy options.

Recommendation 7: EIANZ CCSIS 1) lead stakeholders to map GHG competencies from ECO-Canada, NGER auditor registration, RABQSA in the context of Ecology SIS with Attachment A (and linked to CEnvP), and 2) negotiate with EIANZ on linkages with STEP)

Recommendation 8: EIANZ CCSIS seeks support from DCCEE, and key State agencies, about prospects for proficiencies (and certification) in climate change adaptation

Recommendation 9: EIANZ Impact Assessment SIS 1) review applicability of Impact Assessment to climate change adaptation / impact management and 2) decide whether it will develop proficiencies for the Impact Assessment certification under STEP

Confirm with key stakeholders on their intent and understanding on proficiencies in climate change mitigation, adaptation and energy efficiency.

Recommendation 10: EIANZ CC SIS liaises with New Zealand Government on likely mitigation, adaptation and energy efficiency proficiencies (and certification) in New Zealand

Recommendation 11: EIANZ CC SIS liaises with JAS-ANZ on likely mitigation, adaptation and energy efficiency proficiencies (and certification) in New Zealand and Australia

3.2 Certification

This document's review of certification processes focussed on those for climate change professionals / practitioners and did not look at certification of processes or of products/outcomes.

Recommendation 12: EIANZ CCSIS confirms the focus on professionals/ practitioners and consider competencies that recognise sound processes and products/ outcomes.

Certification did not review different certification schemes and the attributes that work or those that don't. For commercial bodies, this is the preserve of JAS-ANZ.

Recommendation 13: EIANZ CCSIS undertakes a more comprehensive review of professional / practitioner schemes and their attributes and from this identifies key attributes that could be introduced into a certification program.

Recommendation 14: EIANZ CC SIS check content and status of ISO 17024:2011

When evaluating the status of Australia's and New Zealand's emissions databases and trading schemes, the future of certification, likewise proficiencies, is currently undefined.

Recommendation 15: EIANZ CC SIS discusses with 1) DCCEE how the NGER auditor defacto certification scheme may evolve, and then 2) with the Clean Energy Regulator once setup.

Recommendation 16: EIANZ CC SIS reviews New Zealand's ETS review for commentary on and proposals for certification.

EIANZ's CEnvP board is well-placed to manage climate change certification but its position on hosting such a specialist and diverse discipline is unknown.

Recommendation 17: EIANZ CCSIS explores opportunities for CEnvP Board to manage CC certification using experiences with Ecology SIS and the above recommendations.

3.3 Consultation

Consultation has been limited to date.

Recommendation 18: EIANZ CC SIS identifies key stakeholders, contacts and target needs via a survey and using this discussion paper

Recommendation 19: Approach defined stakeholders on the basis of defined roles in Section 2.6

Recommendation 20: EIANZ CC SIS, after exploration with stakeholders, decides on a strategy for certification development that is simple, effective and evolving.

Recommendation 21: Consider commercial organisations for CPD once certification programs have been agreed and set-up

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Attachment A: Core Proficiencies for Environmental Practitioners

Enabling environmental proficiencies		Examples of specific skills + knowledge	Level	
A: Critical thinking	*1. Critically analyse and evaluate problems and solutions*	• Analytical skills, experience in problem solving	STEP 1	General
	2. Develop creative and innovative solutions	• Benchmarking against best practice in their field and applying gap analysis, lateral thinking.	STEP 2	General
	3. Understand the relationship and distinction between: *a. general, broad, strategic or holistic goals and specific, operational, and project delivery outcomes* *b. key and minor issues and opportunities* *c. sustainability components*	• Ability to see the big picture and its application to decision-making, planning and implementation on-the-ground (and vice versa, e.g. how specific projects contribute to global/societal goals and impacts). • Systems thinking. Understand complexity, resilience and the principle of ecosystems and their interrelationship with human factors	CEnvP	General
B: Professional practice	*4. Understand and apply professional standards and practice*	• Conformance and continuous improvement to standards of professionalism, leadership, learning, supervision and technical competence.	STEP 2 & CEnvP	General
	5. Plan and manage work and projects effectively	• Office/workplace practices: time management, task / project planning and management	STEP 1	General
	6. Develop a culture of reflective practice	• Personal / 360^0 review / lessons learnt, e.g. time, work/life balance, initiative/motivation, attitude. Structured review of work projects for learning purposes.	STEP 2	General
	7. Plan and engage in continuing learning	• Professional development skills, networking, mentee, career development, keeping up to date,	STEP 1	General
	8. Use appropriate information technology and techniques	• Computer applications like modelling, statistical analysis, Office suite	STEP 1	Discipline General
	9. Participate in mentoring and assessing performance in professional practice	• Guide, coach, mentor and formally assess performance of junior staff and/or EIANZ members	CEnvP	General
C: Effective communication & interpersonal	*10. Understand internal organisational culture and communication networks*	• Understand internal values and use relationships and influencing opportunities	STEP 2	General
	11. Understand and engage external stakeholders	• Understand stakeholder's business (role and interests), needs,	CEnvP	Discipline

Enabling environmental proficiencies		Examples of specific skills + knowledge	Level	
competency		wants and barriers, culture. Use techniques such as: consultation, engagement, negotiation and collaboration		General
	12. Work within and lead multi-disciplinary teams	• Be a team player, ability to make decisions and take (team, project and individual) responsibility for them	STEP 1 & CEnvP	General
	13. Apply a range of verbal communication skills that effectively engage the audience.	• Engaging verbal presentations, meetings, discussions, workshops, networking, coaching, mentoring etc. that .achieve desired outcomes	STEP 2	General
	14. Compose and apply a range of writing skills that effectively engage the audience	• Well written (clear concise, reasoned, researched, justified) reports, scientific writing, meeting minutes, media releases etc. that .achieve desired outcomes	STEP 1& 2	General
	15. Facilitate resolution of conflicts	• Apply techniques such as mediation, dispute resolution, engagement	STEP 2	General

Generic environmental proficiencies		Examples of specific skills + knowledge		
D: Environmental awareness	*16. Understand environmental values and current principles and frameworks that apply to the values*	• Science, tools and techniques for climate change, heritage, materials, waste, noise, air, water etc.	STEP 1	Discipline
	17. Understand societal, economic, legal and political responses and drivers for change that form opportunities for or barriers to implementing environmental practice	• Key sustainability principles, including precautionary principle, triple bottom line criteria and their application to various areas of environmental practice to achieve measurable outcomes.	STEP 2	General
E: Analysis & assessment	*18. Identify impact sources, use appropriate environmental tools/ techniques/methods, and compile relevant information*	• Conduct baseline studies and undertake environmental monitoring using quality control and technical awareness	STEP 1	Discipline
	19. Analyse data, assess its reliability and accuracy, interpret and present results and develop a balanced/objective opinion	• Analysis (including the use of statistical analysis, modelling, spatial data analysis tools such as GIS/ remote sensing), that provides meaningful evaluation.	STEP 2	Discipline
F: Environmental policy & planning	*20. Plan, implement, evaluate and improve environmental systems, policies, procedures at the appropriate level of decision-making*	• Apply to policy, planning and projects environmental management or decision-making tools such as Environmental Management Systems (EMS), Environmental Impact Assessment (EIA), Environmental Audit, Risk Analysis, Cost-Benefit-Analysis, Life cycle assessment, business plans and the policy development cycle	STEP 2 & CEnvP	General
	Understand, assess conformance to and design regulatory frameworks, accountabilities and standards for policies, projects and activities	• Use knowledge of, and ability to interpret and apply, the requirements of Local, State and Federal Environmental (and related) legislation and protection interests, related standards, policies, contracts and voluntary guidelines.	STEP 1	General Discipline
G: Environmental ethics	*21. Understand ethical decision-making in environmental practice*	• Understand key decision-making stages that apply to stakeholder's needs and wants	STEP 1	General
	22. Recognise ethical issues relative to statutory or other obligations	• Apply professional practice techniques, recognising environmental values, codes of ethics or conduct, and legislative principles relative to legal or contractual 'conditions' and directions.	STEP 2	General
	23. Resolve ethical dilemmas	• Use techniques for resolving or avoiding conflict in an ethical manner and know where to get help if ethical dilemmas arise	CEnvP	General