

Jon Womersley

Womersley Environmental Management

Presentation

The education of Mary Brown -the consummate environmental professional

Biography

Jon Womersley is a Fellow of the Environment Institute of Australia and New Zealand Inc, its Immediate Past President; and a Certified Environmental Practitioner with more than 30 years of experience in environmental management and regulation.

Jon's qualifications are in natural resource management, agriculture and teaching. He has led the environmental protection, cultural heritage, national park and natural resource management functions of government in several Australian jurisdictions. He has participated in national and international forums and assignments.

His experience in regional Australia involved the environmental regulation of mining, mineral processing, heavy industry, port and military training facilities, and other industries with environmental consequences. He oversaw statutory and non-statutory regional environmental planning activities, and has led teams engaged in developing and implementing codes of practice, regulatory standards and guidelines associated with environmental protection laws.

Jon is an effective strategic thinker, communicator, skilled facilitator, and nationally accredited mediator. He is well-travelled, nationally and internationally, bringing to his work a broad understanding of the environmental context in which businesses and governments undertake activities.

Abstract

The Environment Institute of Australia and New Zealand Inc has long aspired to be the professional association for environmental practitioners.

This paper explores the nature of professional organisations and their role in the education of professions. It references both theoretical views of the role of professions in society, and models of professional education developed by the allied professions of planning and engineering, to frame a model for the role of the environment profession in the education of environmental professionals.

The paper examines the adequacies and inadequacies of the range of Learning and Teaching Academic Standards Statements relevant to the teaching of environmental science and environmental management. It proposes the characteristics of environmental and enabling proficiencies that graduates of qualifications in

environmental science and environmental management should possess as they enter the environment profession.

The paper concludes by proposing a Qualification Accreditation System that would allow the environment profession to fulfill its professional role by exercising influence over the nature of environmental studies programs offering qualifications in environmental science and environmental management in Australia and New Zealand. The system proposed would lead to the formal review and accreditation of environmental science and environmental management qualifications by the Environment Institute of Australia and New Zealand Inc.



Environment Institute of
Australia and New Zealand Inc.

THE EDUCATION OF “MARY BROWN”

THE CONSUMATE ENVIRONMENTAL PROFESSIONAL

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The environment profession and professionals

- A **profession** is a disciplined group of individuals who adhere to ethical standards, positions itself as possessing special knowledge and skills
- A **profession** applies this knowledge and exercises these skills in the interest of others
- **Professionals** are governed by codes of ethics, committed to competence, integrity, and the promotion of public good within their expert domain
- **Professionals** are accountable to those served and to society

What knowledge is required?

WE NEED TO UNDERSTAND THREE BIG QUESTIONS:

- **WHERE WILL ENVIRONMENTAL PROFESSIONALS WORK?**
- **WHAT WILL ENVIRONMENTAL PROFESSIONALS DO?**
- **WHAT KINDS OF KNOWLEDGE ARE REQUIRED?**

Where do environmental professionals work?

- **GOVERNMENT**
- **INDUSTRY**
- **CONSULTING**
- **COMMUNITY**
- **RESEARCH**



What do environmental professionals do?

- **ANALYSE PROBLEMS AND IMPLEMENT SOLUTIONS**
- **PLAN AND UNDERTAKE BASELINE AND MONITORING SURVEYS**
- **PREPARE AND IMPLEMENT PLANS**
- **PREPARE AND REVIEW REPORTS**
- **PROVIDE ADVICE ON AND DEVELOP POLICY AND PRACTICE**
- **MANAGE PROJECTS, PEOPLE AND RESOURCES**



What do they do? (Cont.)

- **ASSESS THE ENVIRONMENTAL CONSEQUENCES OF ACTIONS**
- **SEEK, GRANT AND IMPLEMENT APPROVALS**
- **CONDUCT AUDITS AND INSPECTIONS**
- **INVESTIGATE INCIDENTS**
- **UNDERTAKE PUBLIC CONSULTATION**
- **CONDUCT BUSINESSES**



What kinds of knowledge are required?

- **GENERALIST Vs SPECIALIST**
- **SCIENCE Vs GENERAL KNOWLEDGE**
- **LOGIC, PHILOSOPHY AND ETHICS**
- **STATISTICAL ANALYSIS AND RISK ASSESSMENT**
- **COMMUNICATION AND CONSULTATION**
- **PROJECT, PEOPLE AND FINANCIAL MANAGEMENT**
- **DOCUMENT PREPARATION**

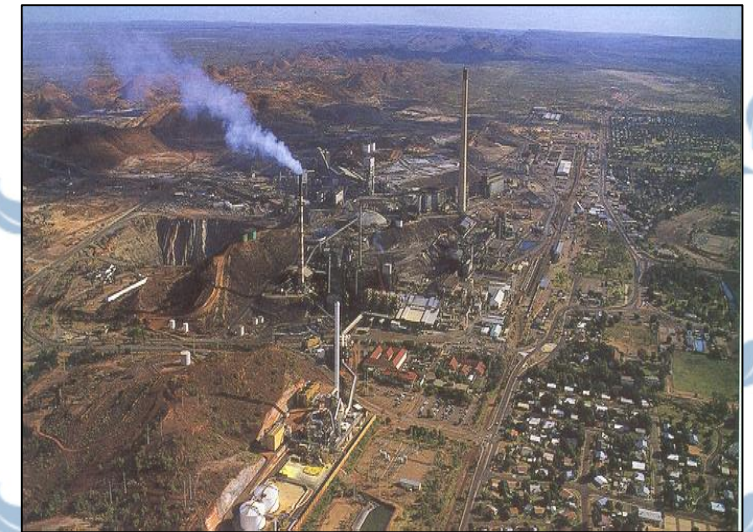


What kinds of knowledge? (Cont.)

■ SPECIFIC KNOWLEDGE

- ECOLOGY, BOTANY, ZOOLOGY, BIOLOGY
- GEOLOGY, GEOMORPHOLOGY, HYDROLOGY
- CHEMISTRY, PHYSICS, CLIMATOLOGY
- ENGINEERING
- GEOGRAPHY, HISTORY, ECONOMICS,
ANTHROPOLOGY, SOCIOLOGY, PSYCHOLOGY, LAW
- MATHEMATICS, STATISTICS, DATA COLLECTION,
ANALYSIS AND REPORTING

Case studies in environmental management



An environmental professional

- **“MARY BROWN”**
 - **Thinks creatively, analytically, and critically**
 - **Uses good science, sound knowledge of practice and independent investigations**
 - **Communicates effectively**
 - **Acts ethically and can be held accountable, and**
 - **Is a member of a professional association (EIANZ)**
- **MARY FACILITATES THE SUSTAINABLE PROTECTION AND MANAGEMENT OF THE ENVIRONMENT**
- **MARY ACTS IN THE PUBLIC INTEREST TO ENSURE THAT HUMAN ACTIVITY IS SUSTAINED BY THE ECOSYSTEM SERVICES OF PLANET EARTH**

Pathways and relationships

QUALIFICATION FRAMEWORKS

- Australian Qualifications Framework
- New Zealand Qualifications Framework

LEARNING AND TEACHING ACADEMIC STANDARDS

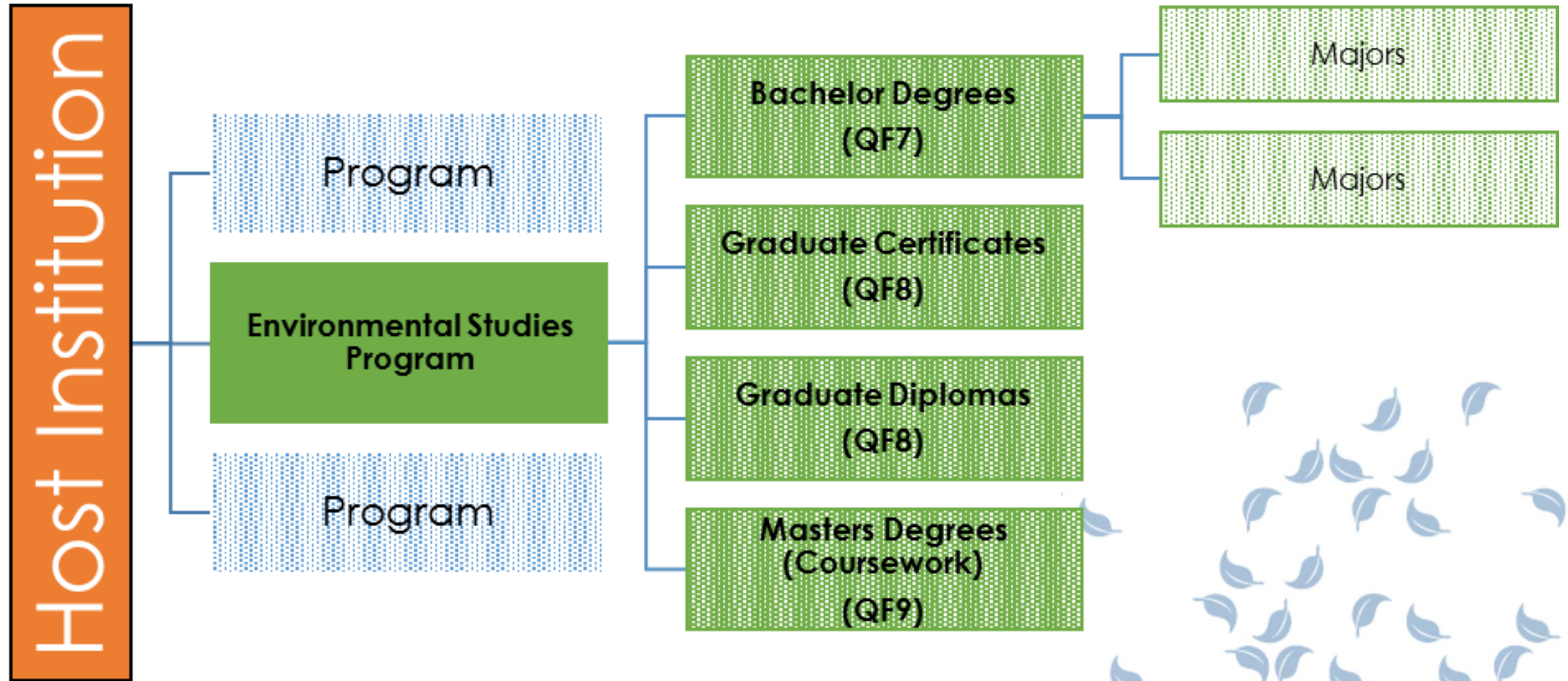
- Environment and Sustainability
- Science
- Biology

LEVELS 7, 8, and 9

- Bachelor Degree
- Graduate Certificate / Diploma
- Masters Degree



Structure of qualification pathways



Objectives of accreditation

- **ENCOURAGE THE DEVELOPMENT, DELIVERY AND RECOGNITION OF QUALITY PROGRAMS / COURSES IN ENVIRONMENTAL SCIENCE AND ENVIRONMENTAL MANAGEMENT**
- **EDUCATE STUDENTS TO A CONSISTENT STANDARD THAT IS APPROPRIATE FOR ENTRY TO AND CAREERS IN THE ENVIRONMENT PROFESSION**
- **ENGAGE THE ENVIRONMENT PROFESSION IN SHAPING THE EDUCATION OF PERSONS ENTERING THE PROFESSION**



Proficiencies for environmental professionals

SEVEN (7) PROFICIENCIES

ENVIRONMENTAL AWARENESS

ENVIRONMENTAL ETHICS


POLICY AND PLANNING

ANALYSIS AND RISK ASSESSMENT

DECISION MAKING

PROFESSIONAL PRACTICE

COMMUNICATION

|  | | Proficiency Matrix for Early Career Environmental Professionals | | | | | | | |
|---|---------------------|---|---|--|---|---|--|--|--|
| | | Environmental Proficiencies | | | Enabling Proficiencies | | | | |
| | | Environmental Awareness | Environmental Ethics | Policy and Planning | Analysis and Risk Assessment | Decision Making | Professional Practice | Communication | |
| | | <ul style="list-style-type: none">Understands the environmental, political, social, cultural and economic context of their workUnderstands and uses the right tools for effective environmental decision makingUnderstands environmental legislation and compliance measures | <ul style="list-style-type: none">Makes decisions and acts in a professional and ethical wayGives impartial and forthright advice, justifying their own position when neededResolves ethical issues in line with accepted standards and practices | <ul style="list-style-type: none">Uses appropriate environmental policies, systems and frameworks in decision makingIdentifies, understands and uses the right tools for effective environmental decision makingIdentifies and complies with regulatory and legislative obligations | <ul style="list-style-type: none">Understands objective and systematic analysis and draws accurate conclusions based on evidenceUnderstands and uses environmental impact and risk assessment tools, techniques and methodsCollects, analyses and interprets data effectivelyUses data to inform decision making | <ul style="list-style-type: none">Analyse problems and finds effective and targeted solutionsUnderstands the strategic and organisational context of their workCan prioritise what is importantApplies sound reasoning and judgement to decision makingCan adapt to change and explore innovative solutions | <ul style="list-style-type: none">Works in a professional wayUnderstands how to work in and be part of an organisationUnderstands the strategic and organisational context of their workUnderstands what is expected and delivers what is requiredReflects and learns from the experience of others and from their personal performanceUses the appropriate technical skills to do their job | <ul style="list-style-type: none">Identifies and uses effective and appropriate communication methodsCan identify and engage with stakeholdersCan write well in a range of formatsUnderstands how to communicate within the reporting and delegation requirements of their organisation | |
| Career Stages | | Attainment Indicators | | | | | | | |
| Stage 1 | Establish – Year 1 | <ul style="list-style-type: none">Graduate and early career entry. Translates theoretical knowledge into practical applications and seeks to rapidly fill-track technical knowledge. Requires varying levels of supervision depending on the task, but capable of rapidly learning new skills. | <ul style="list-style-type: none">Demonstrate understanding of the basic principles of environmental ethical standardsProvide examples of routinely applying quality environmental ethics to daily activityCapable of communicating to management where environmental ethical standards are at risk or can be improvedUnderstands where to go to seek support or information | <ul style="list-style-type: none">Can explain the correct environmental policy, planning and legislation for simple environmental projectsDemonstrate examples of contributing to planning, selecting and applying environmental management toolsKnows major bodies responsible for legislative or policy information and who to ask for technical assistance | <ul style="list-style-type: none">Can identify and plan the application of commonly used environmental impact and assessment tools, techniques and methods for simple projectsCapable of supported selection of simple impact or assessment processesDemonstrate ability to collect, interpret and apply scientific and statistical data | <ul style="list-style-type: none">Provide advice on routine environmental decisionsCan undertake simple time management and project management skillsDemonstrate a basic understanding of own decision making and working style and how to maximise that for workplace efficiencyWorks to ensure output is strategically aligned to organisational goals | <ul style="list-style-type: none">Can explain the structure, vision and strategic goals of their organisationImplements sound processes for planning and managing projects and selfIs executing a personal development plan for improving technical and personal skills | <ul style="list-style-type: none">Capable of converting complex environmental information into simple communicationCapable of using communication tool for specific tasksCan develop a community engagement plan and deliver with support | |
| | Perform 2-3 years | <ul style="list-style-type: none">Completely producing quality work on simple to difficult projects and can readily access an established network of support. Increasingly manages projects with limited supervision and has developed strong understanding of self and modifies approach to situations. | <ul style="list-style-type: none">Can explain their personal processes for investigating and understanding trends, issues and needs relevant to common environmental projectsApply personal ethical values and to working with management to identify and improve ethical approachesShows basic knowledge of leading and influencing change and process managementCompetent in applying routinely used legislation and compliance measures | <ul style="list-style-type: none">Routinely apply quality environmental ethics to daily activity and decision makingDemonstrate examples of applying personal ethical values and to working with management to identify and improve ethical approachesDemonstrate a network of resources or relationships to access policy, legislation or technical information | <ul style="list-style-type: none">Capable of independently applying appropriate environmental policy, planning and legislation to common environmental issuesDemonstrate examples of independently planning, selecting and applying commonly used environmental management toolsCan explain the benefits and limitations of different environmental assessment processes | <ul style="list-style-type: none">Independently achieve or routinely environmental decisionsApply a structured process to consider decisions from a range of points of viewProficiently plans and manages projects, including self-management | <ul style="list-style-type: none">Provide evidence of how they align their professional approach with the workplace culture and organisationDemonstrate success in planning and executing projects to time, budget and resource requirementsDemonstrate structured processes for routinely evaluating work and own performance and self-improvement initiatives | <ul style="list-style-type: none">Competently apply traditional communication mediums, particularly a high level of written communicationProficiently completes high quality written reports, project planning, assessment and evaluationIndependently manages simple community engagement processes or stakeholder or client interaction | |
| | Improve – 3-4 years | <ul style="list-style-type: none">Contributing to refine and enhance knowledge, but completely manages a variety of projects of varying environmental complexity. Entrusted to routinely represent the organisation with stakeholders or clients. Actively applies fresh insight to continually improve outcomes. Actively seeks feedback for self-improvement. | <ul style="list-style-type: none">Can explain their personal processes for investigating and understanding trends, issues and needs relevant to common environmental projectsDemonstrate evidence in contributing to the selection and application of environmental assessment processes and tools for a complex environmental projectDemonstrate evidence in leading complex implementation in environmental awareness of the organisation | <ul style="list-style-type: none">Can provide examples of where their ethical approach has provided a learning for othersDemonstrate evidence of leading and influencing change and process managementApplies their learned experiences to contribute to improve processes, systems or policy | <ul style="list-style-type: none">Demonstrate ability to independently translate and apply commonly used environmental policy, planning and legislation to complex environmental issuesDemonstrate evidence of contributing to the planning and selecting and applying commonly used environmental management toolsCan explain the benefits and limitations of different environmental assessment processes | <ul style="list-style-type: none">Capable of planning and applying commonly used environmental impact and assessment processes including collecting and applying scientific dataContributes to the planning and selecting and applying commonly used environmental management toolsDemonstrate evidence of leading and influencing change and process management | <ul style="list-style-type: none">Entrusted to independently manage routine environmental decisions and contribute solutions to complex decisionsCan explain their personal processes for problem solving, decision making, prioritisation and benefits of decisions from a range of different points of viewExplores and applies theories, tools and processes for continuous improvement to decision making and project management | <ul style="list-style-type: none">Contributes to improved workplace cultureProficiently applies processes to manage projects, time, resources and selfDemonstrate processes for routinely evaluating work and own performance and self-improvement initiatives | <ul style="list-style-type: none">Proficiently applies traditional communication mediums and actively innovates and improves organisational communication (eg. digital media)Translates complex environmental or scientific information to a range of audiencesDisplays good self-awareness and knowledge of personal communication styleIndependently manages important stakeholder and client relationships |
| Stage 2 | Advance – 4-5 years | <ul style="list-style-type: none">Proficient and trusted and applies acquired experience to independently manage complex projects, relationships or issues independently. Experienced in managing self or others and sought out for advice. Ready to advance to management or specialist role or a changed field or role. | <ul style="list-style-type: none">Demonstrate a range of networks, relationships and process skills to assess and evaluate trends, issues and needs in complex environmental projectsProficient in selecting and applying a suite of environmental management processes and toolsCan provide evidence of where their advice has led to improved environmental outcomes | <ul style="list-style-type: none">Can provide examples of influencing, persuading or challenging others to lead and promote sustainabilitySupports or mentors others on environmental ethicsCan demonstrate a personal framework for ethical decision making which aligns with accepted practiceHas a high knowledge of self to impartially assess own values | <ul style="list-style-type: none">Translates and applies environmental policy, planning and legislation to a broad range of complex environmental issues or highly specialised issuesDemonstrate examples of planning, selecting and applying commonly used environmental management toolsCan provide evidence of where their advice has led to improved environmental outcomes | <ul style="list-style-type: none">Demonstrate competence in independently applying environmental impact and assessment tools, techniques and methods to complex environmental projectsCapable of collecting, interpreting and applying scientific and statistical data to complex projectsCan provide evidence of where their advice has led to improved environmental outcomes | <ul style="list-style-type: none">Entrusted to independently manage complex decisionsApply a range of processes, frameworks or theories for effective decision making and project managementCan demonstrate examples of leading and influencing change and process managementDemonstrate strategic and organisational ability in decision making | <ul style="list-style-type: none">Contributes to the development and delivery of strategic goals for their organisationProficiently applies processes to manage projects, time, resources and peopleActively applies processes to improve own skills and performance, including routinely seeking feedback from peers, direct reports and managementHigh level knowledge of self and others and applies this to build and deliver effective teams | <ul style="list-style-type: none">Proficiently applies traditional and digital communication mediumsTranslates complex environmental or scientific information to a range of audiencesDisplays a high level of self-awareness and reflects personal approach to improve communication outcomesCapable of managing complex or hostile stakeholder engagement |

Criteria for accreditation - programs

- **RESOURCING**
- **PROGRAM IDENTITY**
- **ADVISORY BOARD**
- **METHODS OF DELIVERY**
- **WORK INTEGRATED LEARNING**
- **CULTURAL ENGAGEMENT**
- **RESEARCH AND COLLABORATION**
- **ENCOURAGEMENT OF THE PROFESSION**



Generic proficiencies

- Using credible information to develop new skills and knowledge
- Critically analysing and synthesising data
- Developing hypotheses, propositions and arguments
- Evaluating and proposing solutions to complex problems
- Thinking strategically
- Communicating complex ideas in writing and orally
- Working and leading as part of a team
- Valuing cultural diversity
- Operating at local, regional and global scales



Environmental proficiencies

ENVIRONMENTAL PROFICIENCIES

- Environmental skills and knowledge
- Environmental policy and planning
- Environmental analysis and risk assessment
- Environmental ethics

ENABLING PROFICIENCIES

- Decision making and project management
- Communication
- Professional practice



Environmental skills and knowledge

PROFICIENCY

- Has sound knowledge of the context, scientific concepts, and methods associated with protecting and managing the environment at local, regional and global scales.

CHARACTERISTICS

- Understands the environmental, political, social, cultural and economic contexts for environmental knowledge and practice.
- Understands the importance of maintaining the resilience of natural cycles and biodiversity in achieving ecological sustainability.
- Can apply relevant scientific concepts and knowledge to one or more areas of environmental practice.
- Can use appropriate tools to achieve effective environmental outcomes.
- Can apply appropriate monitoring/sampling strategies.



Environmental policy and planning

PROFICIENCY

- Has sound knowledge of the statutory frameworks across jurisdictional levels, and the use and preparation of plans to direct environmental practice and the achievement of outcomes.

CHARACTERISTICS

- Understands and uses appropriate environmental policies, systems and frameworks in decision making.
- Complies with environmental law and standards in project planning, implementation and operation.
- Critically evaluates complex environmental information, applies or modifies good practice environmental management to achieve environmental outcomes.
- Understands relevant scientific concepts, analyses and interprets environmental data.
- Can apply appropriate frameworks for emergency incident management.



Analysis and risk assessment

PROFICIENCY

- Can collect, analyse, interpret and display environmental evidence, identify environmental hazards and assess environmental risks, to inform decisions about protecting and managing the environment.

CHARACTERISTICS

- Collects, analyses, interprets and displays environmental evidence using appropriate field, laboratory, spatial information system, and statistical methods.
- Competently uses a range of equipment and techniques to identify and characterise the biological, chemical and physical properties of the environment.
- Undertakes critical analysis of evidence and draws accurate conclusions
- Competently identifies hazards and assesses environmental, risks, and plans for their avoidance, mitigation and offsetting
- Understands, uses and interprets the outcomes of environmental impact assessment and strategic environmental assessment tools in decision making.

Environmental ethics

PROFICIENCY

- **Makes decisions and acts in an ethical way using lawful, recognised and accepted standards of professional conduct and good practice environmental management.**

INDICATORS

- **Understands the basic principles of environmental ethics and ethical issues associated with environmental science and environmental management**
- **Resolves ethical issues in line with recognised and accepted standards of practice**
- **Gives accurate, impartial and forthright advice based on sound scientific evidence and good practice environmental standards.**
- **Adapts personal knowledge and practice in the context of new and emergent knowledge, standards and legislation**
- **Communicates to others where ethical standards are at risk or can be improved**

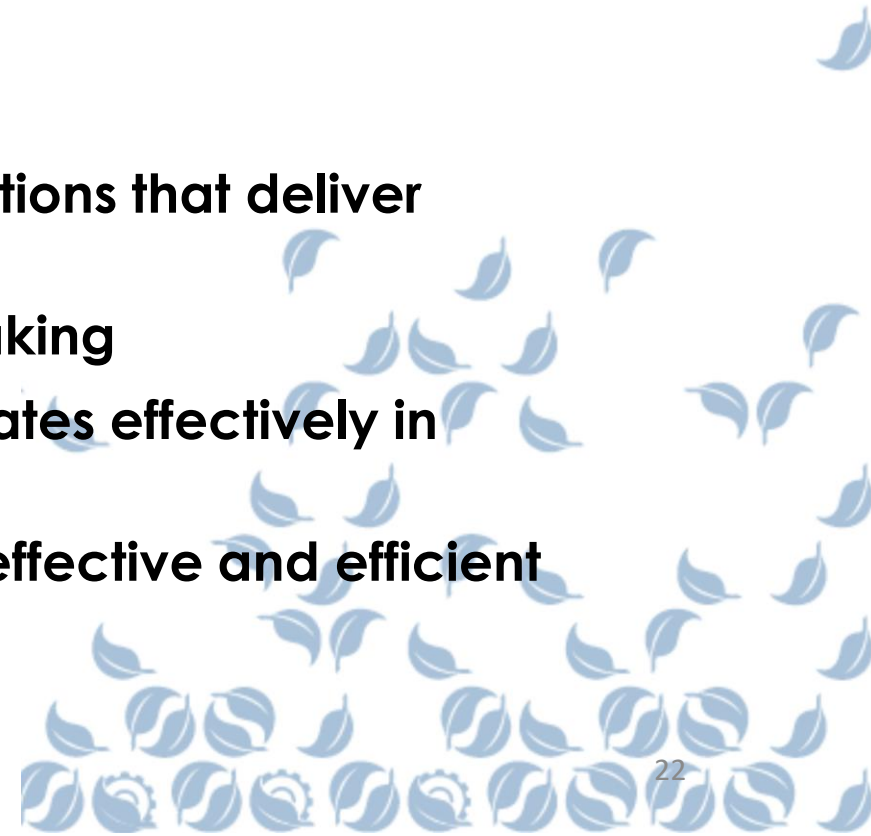
Decision making

PROFICIENCY

- **Makes effective and efficient decisions, applying creative thinking and project management skills to deliver appropriate, innovative, timely, cost effective, and sustainable environmental outcomes.**

CHARACTERISTICS

- **Understands and can explain the context for their work**
- **Analyses problems and identifies effective targeted solutions that deliver environmental outcomes**
- **Applies sound reasoning and judgement to decision making**
- **Adapts responses to changing circumstances and operates effectively in uncertain organisational contexts**
- **Plans and manages projects and work in a systematic, effective and efficient manner**



Professional practice

PROFICIENCY

- Effectively manage environmental projects demonstrating self-direction and creativity, collaboration with contributing disciplines, identification of constraints, development of solutions, and promotion of strategic environmental outcomes that go beyond minimum statutory requirements.

CHARACTERISTICS

- Works effectively in an independent capacity, as part of a team, and in an organisation
- Motivates and influences others in understanding environmental values and applying good practice environmental management standards
- Reflects and learns from personal experience and that of others to improve previous practice
- Has and applies the appropriate technical knowledge and skills to do their job
- Identifies areas of uncertainty and risk and acts to appropriately manage

Communication

PROFICIENCY

- **Effectively communicates the context, scientific concepts, and methods associated with protecting and managing the environment, using different methods to engage stakeholders.**

CHARACTERISTICS

- **Identifies and uses appropriate communication methods with skill and accuracy**
- **Seeks contributions from others and identifies, engages with, and responds to stakeholders**
- **Recognises the understanding and motivations that others bring and resolves conflict using appropriate methods**
- **Understands how to write accurately, and report within the delegated authority of an organisation**
- **Influences decision making**

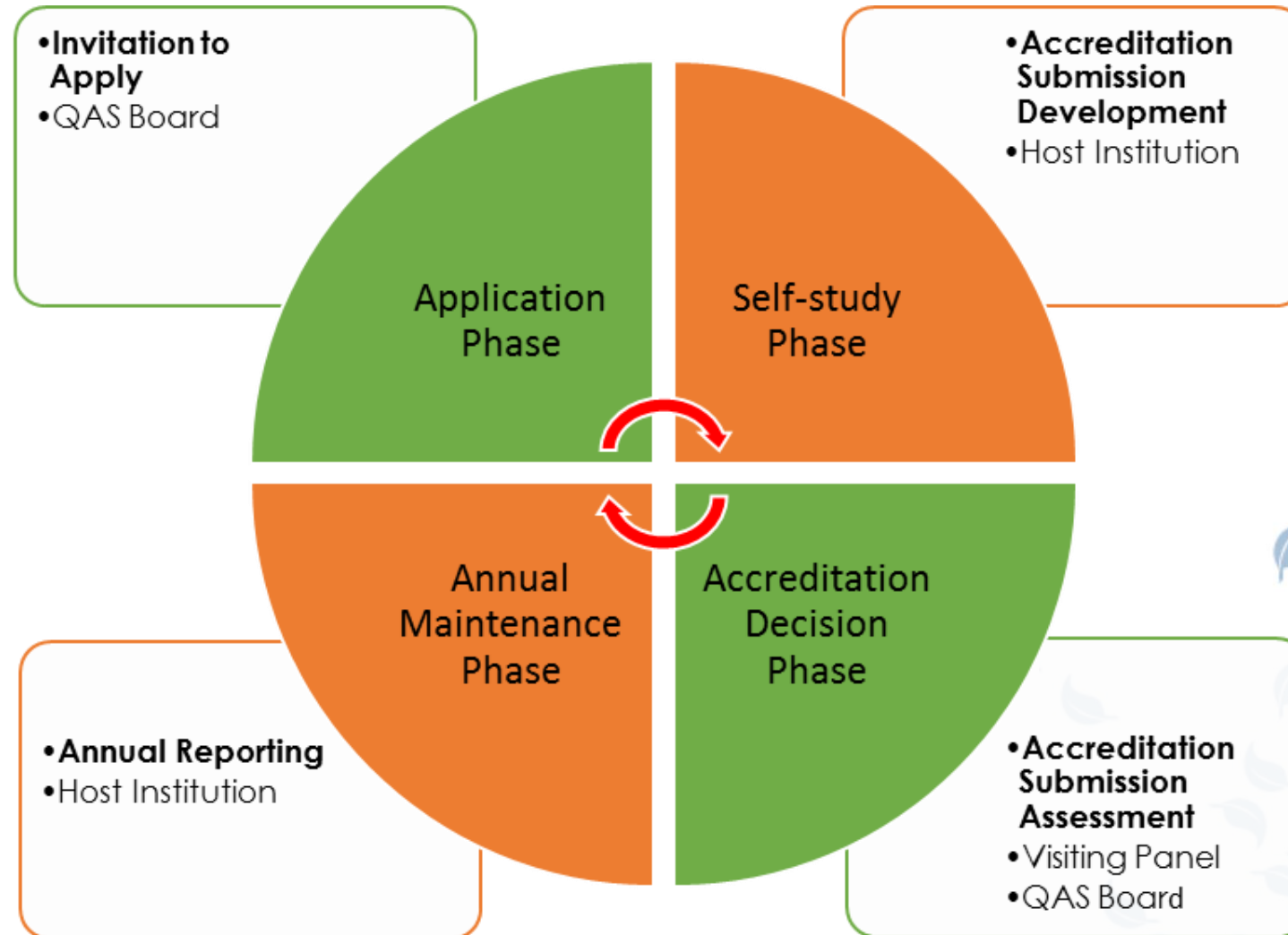


What does accreditation do?

- **GIVES ASSURANCE THAT ACCREDITED PROGRAM PROVIDERS ARE COMMITTED TO:**
 - Academic quality and high standards of teaching
 - Teaching that is built on the foundational knowledge associated with environmental science and environmental management
 - Teaching that reflects professional ethics and good practice environmental management
 - Learning outcomes that prepare students for professional careers in industry, government, academia and the community
- **ENSURES DESIGN AND DELIVERY OF ACCREDITED PROGRAMS / COURSES IS ACCOUNTABLE TO THE ENVIRONMENTAL PROFESSION, INDUSTRY, GOVERNMENTS AND SOCIETY**
- **BUILDS A STRONGER, BETTER QUALIFIED PROFESSION**



The accreditation process



The accreditation process (Cont.)

- **SUBMISSION BY INSTITUTION TO EIANZ FOR EACH DEGREE PROGRAM TO BE ACCREDITED**
 - ANALYSIS OF HOW THE PROGRAM MEETS THE ACCREDITATION CRITERIA
 - AGREEMENT TO ENTER INTO AN MoU WITH THE EIANZ
 - PAYMENT OF ACCREDITATION APPLICATION FEE
- **REVIEW OF SUBMISSION AND SITE VISIT BY EIANZ VISITING PANEL**
 - 3 PERSONS – 1 ACADEMIC AND 2 PRACTITIONERS
 - RECOMMENDATION TO QUALIFICATION ACCREDITATION SCHEME BOARD
 - PAYMENT OF ACCREDITATION FEE IF APPROVED
- **ACCREDITATION GRANTED FOR 5 YEARS**
 - CERTIFICATE OF ACCREDITATION
 - USE OF EIANZ ACCREDITATION LOGO
 - PAYMENT OF ANNUAL ACCREDITATION MAINTENANCE FEE



The Challenges

Good practice environmental management is fundamentally founded in good science, knowledge of law and policy, and effective communication.

Should we teach undergraduates the fundamental knowledge of science and its methods, law and policy, and effective communication that are the foundation of environmental management?

Should we teach undergraduates the basic knowledge that allows them to develop careers as environmental professionals who solve the legacy issues, and avoid and mitigate the environmental problems of the future?

The Environment and its Challenges

