

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Environmental Science, Environmental Management & Waste Management

registered by Organising Field 10 – Physical, Mathematical, Computer and Life Sciences publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saqqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria

Comment on the Qualification and Unit Standards should reach SAQA at the address below and *no later than 18 May 2009*. All correspondence should be marked **Standards Setting – SGB** for Environmental Science, Environmental Management & Waste Management and addressed to

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Environmental Management

SAQA QUAL ID	QUALIFICATION TITLE		
66789	National Certificate: Environmental Management		
ORIGINATOR		PROVIDER	
SGB Environmental Science, Env Mght and Waste Mght			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	134	Level 5	Regular-Unit Stds Based

This qualification does not replace any other qualification and is not replaced by another qualification.

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

This Qualification is for any individual who is, or wishes to be, involved as an officer in the environmental management sector especially in the fields of environmental science, environmental management and waste management. While the focus of this Qualification is on the fields mentioned above, it is possible that other services or aspects could also be included in the qualification. The Qualification contains all the competencies, skills and values required by a learner who may wish to access a higher qualification within the environment sector.

The core component of the National Certificate: Environmental Management at NQF Level 5 contains general competencies that will help the learner acquire a broad and meaningful overview of the environment management sector before specialising in a particular field. The Elective component allows for streams of specialisations in environmental waste management, air quality management, water quality management, noise pollution and other related fields. The learner will acquire expanded knowledge, skills and insight into one of these streams.

This Qualification will add value to the learner's conceptual understanding of the field and work performance. It will also enhance the provision of service within the environmental management sector.

The Qualification will provide the broad knowledge, skills and values needed in the environmental management field and will facilitate access to, and mobility and progression within, education and training for learners who:

- Were previously disadvantaged.
- Have worked in this field for many years, but have no formal qualifications and would like to achieve this qualification through the process of Recognition of Prior Learning (RPL) and/or formal study.
- Wish to extend their range of skills and knowledge and hence their competencies in environment management.

The Qualification has building blocks that can be developed further in qualifications at a higher level. It also focuses on the skills, knowledge, values and attitudes required to progress further. The intention is:

- To promote the development of knowledge, skills and values that are required for service excellence within the field of environmental management.
- To release the potential of people.
- To provide opportunities for people to explore different activities within the environmental sector.

Rationale:

The National Certificate: Environmental Management at NQF Level 5 is designed to meet the needs of those learners who wish to become environmental officers working under the supervision of a senior environmental officer or an environmental manager. Currently there are no national qualifications for these learners at this level. This will be the first national qualification in the higher education band that will constitute the initial step for these learners towards becoming environmental managers.

Broadly-speaking, Environment Management constitutes a series of essential services currently being rendered in a variety of contexts, both urban and rural. On one level, technological advances and the continuous movement of people especially from the rural to urban areas in search of employment - with their concomitant impact on the environment - have increased the need for management of the environment with a view to improve the quality of life and future sustainability. At another level, nature conservation areas, the oceans and other natural phenomena (forests, rivers, lakes etc) are also impacted upon by human activity and require the services and competencies of environmental managers to ensure the sustainability of these pristine natural habitats.

The function of the environmental officer would be to assist the environmental manager who operates in a variety of contexts in the performance of those tasks and activities that would lead to the preservation and management of the environment as outlined above. It is in the interest of the country as a whole to have environmental managers to ensure that their officers are trained according to this Qualification in order to improve productivity and efficiency.

The structure of this Qualification will allow learners to acquire a set of generic competencies in Environment Management and then to specialise in one particular stream. It will also allow learners to change direction within the Environmental Management sector should they either discover that a particular specialisation is not something that satisfies their career trajectory or they wish to acquire more competencies in the field. There is therefore sufficient possibility for increased specialisation without the need to do an entire qualification. There is also the need for highly skilled Environmental Managers for which this is the first qualification.

The National Certificate: Environmental Management at NQF Level 5 is the first national qualification in this sector. In terms of a learning pathway the learner will be able to pursue the Advanced Certificate: Environmental Education, Training and Development Practice at Level 6 or the Bachelor of Environmental Education, Training and Development Practice at Level 6.

The National Certificate: Environmental Management at NQF Level 5 supports the objectives of the NQF in that it gives the learner access to a registered qualification. It will ensure that the quality of education and training in the sub-field is enhanced and of a world-class standard. The Qualification will allow learners not only to develop their knowledge and skills in the field of Environmental Management but will also enable them to benchmark their competence against international standards.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED IN PLACE

It is assumed that learners are competent in the following:

- Mathematical literacy at NQF Level 4.
- Communication at NQF Level 4.
- Environmental or management related subject at NQF Level 4.

It would be preferable if learners acquired the following qualification prior to embarking on learning towards this qualification:

- ID 50309: FETC: Environmental Practice.

Recognition of Prior Learning:

The structure of this Unit Standard-based Qualification makes the recognition of prior learning (RPL) possible, if the learner is able to demonstrate competence in the knowledge, skills, values and attitudes implicit in this Qualification.

Learners who already work in the Environment Management sector and who believe that they possess the competencies to enable them to meet all of the outcomes listed in the Unit Standards will be able to present themselves for assessment against the Unit Standards of their choice. A range of assessment tools and techniques should be used which have been jointly decided upon by the learner and the assessor. Such procedures, and the assessment of individual cases, are subject to moderation by independent assessors. The same principles that apply to assessment of this Qualification also apply to recognition of prior learning.

Once found competent, these learners will be certified as competent and credited accordingly. Recognition of Prior Learning can also be conducted for these learners at qualification level, by means of Integrated Assessment.

RPL will allow for accelerated access to further learning and gaining of credits towards the qualification. All RPL ought to be carried out by the provider in agreement with the relevant ETQA or another ETQA that has a Memorandum of Understanding in place with the relevant ETQA.

RPL is particularly important, as there are people in the profession with a variety of qualifications of differing quality and scope. It is important that an RPL process be available to assist in making sense of existing qualifications, and helping to standardise qualifications towards a common standard.

QUALIFICATION RULES

A minimum of 134 credits are required to complete the Qualification which is made up of the following components:

- Fundamental: 18 credits.
- Core: 98 credits.
- Electives: 18 credits.

Total: 134 credits.

Fundamental Component:

- There are 18 credits allocated to this component at the level of the Qualification.
- All the Unit Standards designated as Fundamental are compulsory.

Core Component:

98 credits have been allocated to the Core for the purpose of this Qualification. These Unit Standards provide the generic knowledge and skills related to Environmental Science and Environmental Management in general, as highlighted in the Purpose Statement.

All the Unit Standards indicated as Core are compulsory.

Elective Component:

Candidates are required to select a minimum of 18 credits from the elective unit standards in the specialisation stream of their choice. Currently only Waste Management is available as a specialisation stream, but other streams, listed below, will be included in the future. Each of these streams constitutes a set of appropriate Unit Standards that allow the learner to obtain competencies in particular areas within the Environmental Science and Environmental Management sectors.

These Elective streams provide opportunities for the holistic development of the learner and allow for maximum flexibility and multi-skilling to enable the learners to achieve a Qualification that is relevant to the context in which they work. Learners who complete a specialisation may complete Unit Standards from other streams if they relate directly to the learner's context or focus area of practice.

The proposed streams are:

- Air Quality Management.
- Water Quality Management.
- Pollution.

Where the credits of the Unit Standards in the specialisation do not add up to a minimum of 18 credits, the learner may choose any other Unit Standard/s from the Elective component to complete a minimum of 18 Elective credits.

Specialisation Stream 1: Waste Management:

Learners must do ALL the Unit Standards from the list below to achieve the specialisation stream for waste management:

- ID 264460: Collect and transport waste, Level 5, 6 Credits.
- ID 264474: Demonstrate an understanding of waste generation and primary storage, Level 5, 6 Credits.
- ID 264475: Treat and process waste, Level 5, 8 Credits.
- ID264476: Dispose of waste, Level 5, 6 Credits.

Total number of credits for this Specialisation: 26 Credits.

General Unit Standards:

Learners who do not wish to complete a specialisation stream may select a minimum of 18 credits from the Unit Standards listed below:

- ID: 252026: Apply a systems approach to decision making, Level 5, 6 Credits.
- ID: 15234: Apply efficient time management to the work of a department/division/section, Level 5, 4 Credits.

- ID: 252033: Demonstrate ways of dealing with the effects of dreaded diseases and in particular HIV/AIDS, Level 5, 8 Credits.

EXIT LEVEL OUTCOMES

1. Describe the biophysical environment and the importance of developing an integrated waste management plan.
2. Demonstrate and apply knowledge of integrated environment management tools.
 - Outcome Range: Includes but is not limited to environmental tools for planning, implementation, checking and stakeholder engagement.
3. Apply the environment regulatory and ethical framework in the workplace.
4. Develop an operational plan based on operational strategies for environmental issues.

Critical Cross-Field Outcomes:

Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made when:

- Determining threats to biodiversity and generating possible responses.
- Distinguishing between the purpose, definitions, concepts and the relevant contents of the various Acts that constitute environmental legislation.
- Implementing each environmental tool of analysis in a scenario or context.
- Analysing environmental practices and problems using environmental ethics.
- Considering project alternatives and selecting the preferred option.
- Applying the most appropriate method of damage control in the event of an accident or incident (e.g. relocating hazardous/dangerous materials).
- Applying OHS Legislation in the workplace.

Work effectively with others as a member of a team, group, organisation, community to:

- Minimise waste generation.
- Manage the implementation of a project plan.
- Contribute to solving problems in the environment.
- Take an active part in applying OHS Legislation to ensure the requirements and needs of the represented people are addressed.
- Maintain the safety of all the individuals in the workplace.

Organise and manage oneself and one's activities responsively and effectively when:

- Analysing human vulnerability and the challenges to the biophysical environment.
- Analysing biodiversity and its threats.
- Identifying and explaining the legislation pertaining to the environment.
- Understanding the definitions, key concepts and principles, process and use of each environmental management tool.
- Developing a code of ethics.
- Managing the members of the project team.
- Exploring alternate energy resources to preserve vital resources like water and firewood.
- Selecting and utilising personal protective equipment suitable to the dangerous/hazardous material.

Collect, analyse, organise and critically evaluate information to:

- Determine responses to the threats to biodiversity.

- Determine the most appropriate environmental management tool to use in a particular scenario or context
- Store or minimise waste.
- Assess environmental practices and problems.
- Develop a clear and workable project plan.
- Select and apply the most efficient and safe method of handling different dangerous and hazardous materials.

Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation to:

- Present reports to management.
- Address conferences, symposia, workshops.
- Store and minimise waste.
- Delegate tasks and responsibilities to project team members.
- Ensure compliance with occupational health, safety and environmental legislation.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

- The physical components of the environment and processes related to the physical environment are described in terms of their inter-relationships.
- The importance and threats to South Africa's biodiversity are explored to emphasise its preservation and significance for global scientific significance.
- The relationship between people and the environment is explored in terms of human vulnerability, political and economic processes and challenges posed to the biophysical environment.
- The threats to the biophysical environment presented by waste are discussed in terms of the way in which these can be managed.
- The impact of a pollution incident on the environment is discussed and the relevant procedures are identified to deal with it.
- The importance of developing an integrated waste management plan is explained in terms of the waste hierarchy and cycle.
- Ways of dealing with waste and hazardous substances are explored in order to protect the environment for future development.
- Specialist incident investigation techniques are applied to a specific incident in a work environment.

Associated Assessment Criteria for Exit Level Outcome 2:

- The definition, key concepts and principles of environmental tools of analysis are described to demonstrate their importance and use.
- The process for the use of these tools is explained and described.
- Environmental tools are applied in specific contexts to enable a greater understanding of the environment in all its facets.

Associated Assessment Criteria for Exit Level Outcome 3:

- Relevant aspects of the Constitution of the Republic of South Africa pertaining to the environment are discussed emphasising the rights of citizens to a healthy environment.
- Environmental legislation based on the Constitution is discussed and applied in a variety of contexts to ensure safe and healthy environments.
- Legislation related specifically to waste management is discussed and relevant sections are analysed and applied to contexts and situations.

- Other policies and documents that enhance the power of environmental legislation are identified and explained to demonstrate the translation of legislation into different levels of society.
- The current Occupational Health and Safety Act is discussed and its legal principles are applied to ensure safety of individuals, societies and the environment.
- Environmental practices and problems are analysed within an ethical framework in order to develop environment value positions.
- An environmental code of ethics is developed to ensure that environmental rights are upheld in the workplace.

Associated Assessment Criteria for Exit Level Outcome 4:

- Research and data analyses are conducted to present an accurate account of an environment issue.
- Project planning skills are applied to develop and implement an action plan to deal with the issue.
- Communication skills are used to manage the project through delegation of tasks and responsibilities.
- Problem solving techniques are applied in investigating an incident in a variety of contexts.

Integrated Assessment:

The importance of integrated assessment is to confirm that the learner is able to demonstrate applied competence (practical, foundational and reflexive) and ensure that the purpose of this Qualification is achieved. Both formative and summative assessment methods and strategies are used to ensure that the Exit Level Outcomes and the purpose of the Qualification are achieved through the achievement of the Unit Standards. Learning, teaching and assessment are inextricably linked.

Learning and assessment should be integrated and assessment practices must be fair, transparent, valid and reliable. A variety of assessment strategies and approaches must be used. This could include tests, assignments, projects, demonstrations and/or any applicable method. The learner must demonstrate evidence of analytical thinking, problem solving, and integration of theory and practice as deemed appropriate at this level.

Formative assessment is an on-going process which is used to assess the efficacy of the teaching and learning process. It is used to plan appropriate learning experiences to meet the learner's needs. Formative assessments can include a mix of simulated and actual (real) clinical practice or authentic settings. Feedback from assessment informs both teaching and learning. If the learner has met the assessment criteria of the Unit Standards then s/he has achieved the Exit Level Outcomes of the Qualification.

Summative assessment is concerned with the judgement of the learning in relation to the Unit Standards and consequently of the Exit Level Outcomes of the Qualification. Such judgement must include integrated assessment(s) which test the learners' ability to integrate the larger body of knowledge, skills and attitudes, which are represented by the Unit Standards and the Exit Level Outcomes. Summative assessment can take the form of oral, written and practical examinations as agreed to by the relevant ETQA.

Integrated assessment must be designed to achieve the following:

- An integration of the achievement of the Exit Level Outcomes in a way that reflects a comprehensive approach to learning and shows that the purpose of the Qualification has been achieved.
- Judgement of learner performance to provide evidence of applied competence or capability.

INTERNATIONAL COMPARABILITY

Comparison was done with the countries below:

The United Kingdom:

The United Kingdom is one of the leaders in environmental management. Many of the courses offered by institutions are taught internationally through branches of the institutions or other providers, like City and Guilds.

There are many providers who offer the programmes of the Institute of Environmental Management & Assessment (IEMA).

The IEMA Associate Certificate in Environmental Management:

The course covers the introduction of the Environmental Protection Act 1990, the Pollution Prevention Control Act 1999 and the Environment Act 1995, as well as extensive current and proposed UK and EU legislation. It provides complete grounding in the fundamentals of all aspects of environmental management.

After completing the course the candidate should be able to:

- Identify and understand the implications of past, present and possible future environmental issues.
- Understand current environmental policy and legislation covering both UK and EU.
- Appreciate the need to manage the environment by assessing both the costs, in terms of the environmental effects and benefits such as energy and waste minimisation.
- Identify and implement key environmental control strategies.
- Understand the main requirements of effective environmental management systems.
- Communicate the above knowledge and skills to persons both within and outside the organisation.

The IEMA Associate Certificate in Environmental Management: Course Key Facts:

This course is for people who have a responsibility for environmental issues, their management & implications for their organisation.

Learning Outcomes:

- Appreciate how global and local environmental issues evolve, and identify why and how they can be incorporated into the management of an organisation.
- Understand in general terms the impacts of societal activities on the earth's natural systems.
- Outline practical ways in which an organisation can reduce its impacts, both strategically and operationally.
- Understand inter-relationships of the environmental, economic, social and ethical aspects of sustainability.
- Understand in general terms the structure of the regulatory process.
- Determine the key environmental legislation, agreements and initiatives relating to an organisation and their relevance to operations.
- Instigate management controls to ensure that operations do not pollute and compliance is maintained.
- Design & implement processes for the assessment, interpretation and management of environmental performance.

Loire in the United Kingdom offers a number of short courses each of which overlaps significantly with aspects of this Qualification. These are:

Environmental Sustainability, which includes the following modules:

- The earth's natural systems and cycles.
- The importance of biodiversity.
- Business and the environment.
- The importance of incorporating environmental considerations into an organisation's operations.
- The principal sources of pollutants and their effects on ecosystems.
- Key issues such as climate change and ozone depletion.
- The control of pollutants.
- The concepts behind sustainability such as Agenda 21.
- The precautionary and polluter pays principles.
- Carbon management.

Environmental Legislation, which includes the following modules:

- Instruments for change.
- Controls on emissions to the atmosphere.
- Controls on the management of contained waste.
- Controls on the discharges to the water environment.
- Issues relating to contaminated land.
- Nuisance; producer responsibility.
- Other relevant UK and EU environmental legislation.

Some aspects of the following short course are touched on by this Qualification.

Improving Environmental Performance, which includes the following modules:

- Identification and assessment of environmental impacts.
- Environmental management systems.
- Monitoring.
- Environmental audit.
- Life cycle analysis.
- Environmental impact assessment.
- Strategic environmental assessment.
- Environmental risk assessment.
- Pollution.
- Prevention and control.
- Environmental communication and reporting.

Loreus also offers the IEMA Approved Associate Certificate Course in Environmental Management (UK), which includes the following modules:

- Environmental Sustainability: The earth's natural systems; business and the environment; effects of releases; towards sustainability.
- Environmental Legislation: Instruments for change; controls on emissions and discharges; waste management; contaminated land; nuisance; producer responsibility.
- Management of Environmental Performance: Environmental impacts; environmental management systems; monitoring and audit; life cycle analysis; EIA; SEA; PPC; communication.

Corporate Risk Systems, another training organisation, offers the following course:

Environmental Management Certificate, which includes the following modules:

- Environmental issues.

- Pollution.
- Business and The environment.
- Energy and water.
- Waste Management.
- Transport.
- Environmental Law.
- Environmental Management.

City and Guilds offers a three day accredited course in Certificate in Environmental Management which has been developed to help companies to keep abreast of the ever increasing body of legislation and best practice regarding environmental issues.

This course provides a practical overview of the management of the main problem areas in terms of the legal requirements and the practical measures which should be taken on-site as a result.

Key topics covered include:

- Environmental driving forces.
- Global issues.
- Sustainability.
- Waste management: Legislation and best practice.
- Air emissions: Legislation and best practice.
- Water and round management, legislation and best practice.
- Energy Management.
- Environmental Design.
- Environmental Management systems.
- Resource Efficiency.

The following IEMA course is offered in Turkey: IEMA International Associate Certificate in Environmental Management & Assessment. Aspects of this course resonate with this Qualification.

This course ensures that people in positions of responsibility appreciate the environmental issues relating to their working processes and develop an understanding of how to manage them. It covers the management of environmental issues, legal requirements, water, air, land and environmental management issues and controls.

Course Objectives:

- To understand the issues, science and philosophy that underpins environmental sustainability.
- Identify ways to incorporate environmental issues into the management of an organisation.
- To identify relevant legislation for an organisation and take steps towards ensuring compliance.
- To understand the role of various analytical and managerial tools and the assessment, interpretation and management of environmental performance.
- To understand the key elements of an environmental management system.

The following IEMA course is offered in Egypt, Bahrain, India and the United Arab Emirates: IEMA International Associate Certificate in Environmental Management & Assessment. There are overlaps between this course and this Level 5 Qualification.

Learning Outcomes:

- Appreciate how global and local environmental issues evolve, and identify why and how they can be incorporated into the management of an organisation.
- Understand in general terms the impacts of societal activities on the earth's natural systems.

- Outline practical ways in which an organisation can reduce its impacts, both strategically and operationally.
- Understand inter-relationships of the environmental, economic, social and ethical aspects of sustainability.
- Understand in general terms the structure of the regulatory process.
- Determine the key environmental legal framework, agreements and initiatives relating to an organisation and their relevance to operations.
- Instigate management controls to ensure that operations do not pollute and compliance is maintained.
- Design and implement processes for the assessment, interpretation and management of environmental performance.

New Zealand:

The Open Polytechnic of New Zealand offers a 60 credit Certificate in Environmental Management at the level of this Qualification (Level 5).

Knowledge and understanding of the environment and environmental issues is becoming increasingly important in all areas of life. The programme is structured to provide the learners with a practical understanding of New Zealand's resource management law and familiarise them with the purpose of principles of environmental impact assessment. The learner will explore management issues at both the national and local level and look at the requirements of the Resource Management Act and Local Government Act.

The Certificate is seen as a stepping-stone towards The Open Polytechnic's Diploma in Environmental Management.

The United States:

The Beahrs Environmental Leadership Program (ELP) is offered at the University of California, Berkeley and in St. Petersburg State University in Russia, with discussions underway to establish Centers in Southeast Asia, Southern Africa, and South Asia.

Course outcomes:

- Integrate interdisciplinary knowledge and analyze trade-offs to solve environmental problems.
- Explore a range of policies, technologies and institutions that promote sustainable livelihoods and environments.
- Ecological Footprint and Sustainability Workout.
- Population, Poverty and the Environment.
- Environmental Policy and Pollution.

There is some overlap between the above course and this Level 5 Qualification.

The University of California (Irvine Extension) offers a Certificate in Environmental Management that prepares professionals at every career level to meet the challenges of the rapidly changing environmental profession. The certificate has many overlaps in term of content with this Qualification.

That program equips learners to:

- Understand the roles of environmental regulatory agencies in a specific project.
- Understand the basic sciences influencing environmental control systems.
- Conduct site-specific environmental activities such as project planning assessing compliance.
- Integrate the disciplines of environmental management into a comprehensive program.
- Recognize the importance of specific environmental computer tools.

- Obtain immediately applicable knowledge and skills for enhanced job performance or career advancement.

Harvard University's Environmental Management Certificate Program has some overlap with this Qualification.

The EM program offers students many benefits, including:

- A focus on environmental stewardship and sustainability.
- Development of interdisciplinary problem solving skills.
- Opportunities to develop relationships within an interdisciplinary network of graduate students, UW faculty, and external partner organizations.
- A problem- and solution-based approach to environmental issues.
- Work in integrated, multidisciplinary teams.
- Skills development in networking, team-building, project management, and communications; and a curriculum suitable for students from many backgrounds, such as engineering, physical and natural sciences, public policy, economics, geography, public health, business, law, and political science, to name a few.

Canada.

The University of Toronto offers the Certificate in Environmental Management. The objectives of the Certificate in Environmental Management program are to develop an understanding of the basic premises, theories and practices associated with environmental management and to provide an insight into the systems approach which can be employed to mitigate a wide range of environmental problems.

Solutions are found for case studies which may include: Globalization, climate change, water security, fisheries, agriculture, forestry, wildlife, parks, minerals, and/or waste management.

The University of Calgary offers the Environmental Management Certificate for part-time learners, who will be able to learn systems, processes, tools and strategies, risk management techniques and legal requirements that will help in assessing and managing air, water, soil and waste. The program blends theory and practice while focusing on the need for sustainable development and the use of market-driven solutions.

The following is a listing of some of the shared subjects:

- Environmental, Health and Safety Auditing.
- Environmental Law.
- Management Tools and Techniques for Environmental Issues and ambient monitoring approaches.
- Air Quality.
- Waste Management Systems.
- Water Management for the 21st Century.

Africa:

One of the Unit Standards in the Qualification is about Environmental Law. In Africa, the United Nations Environment Programme (UNEP) offers the Global Training Programme in Environmental Law and Policy every two years. It consists of two weeks of intensive training. The training is designed to familiarize the participants with legal and institutional developments in the field of environmental law at the national, regional and global levels and to promote greater interest in and commitment to using environmental law as an instrument for translating sustainable development policies into actions.

The countries that have benefited from these capacity building programmes include Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, Congo (Brazzaville), Congo (DRC, Zaire), Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe. Southern African Development Community (SADC).

The purpose of the SADC Regional Environmental Education Programme is to enable environmental education practitioners in the SADC region to strengthen environmental education processes for equitable and sustainable environmental management choices. However, not much is available on the nature and duration of its programmes.

Nigeria:

BMT Cordah have teamed up with Scientific Ideas Limited, to offer a 4-day Training Course summarising best-practice techniques and methodologies associated with the effective management of environmental and social sustainability issues frequently identified in the global Oil and Gas industry.

This Course covers the following topics, some of which overlap with this Qualification:

- Sustainability in a Commercial Context: Identifying opportunities to save time and cost within the oil and gas sector.
- Waste Management in the Oil and Gas sector; how to make money from waste management facilities.
- Application of niche environmental management tools and software systems.
- How to apply international standards and sector-specific guidelines; IFC Performance Standards.
- Community Health and Safety; best practice for effective engagement strategies, managing employment seekers, cultural mixing issues.

EarthWatch is an independent organization whose mission is to improve the relationship between man and his environment; to improve the quality of the earth, to inform and educate the people about the earth or environment.

EarthWatch has developed these training programmes to meet the specific needs of the industrial sectors. The following programmes are offered:

- Waste Management Training Programmes for SPDC, Integrated Waste Management Teams.
- Hazardous Substance Storage, Transport, & Handling Management Training Course for SPDC, Warehousing Teams.
- Occupational Health and Safety, and Hygiene.
- Pollution Preventative Strategies.

Botswana:

While the University of Botswana only offers degree programmes in Environmental Science, the Department of Environmental Science and Outreach Activities offers a variety of short courses to those involved in public sector organisations in environmental impact assessment, geographic information systems for environmental management and public participation for natural resource management. Recently, the Department ran two short courses in Integrated Environmental Assessment Reporting for UNEP.

Zambia:

The Institute of Environmental Studies at the University of Zimbabwe is the headquarters of the Southern African Network for Training and Research in Environment (SANTREN), which is based in Zambia. Members of SANTREN are drawn from at least 30 institutions within the SADC region.

SANTREN has developed the following commercial training courses, some of which resonate with this Qualification:

- Regional Comparative Analysis of the Environmental Impacts of Mine Dumps:
 - Management of Sustainable Use of Water Resources.
 - Assessment and Monitoring of Groundwater Quality in a Polluted Aquifer: Botswana Case Study.
 - Interdisciplinary Training Modules in Mining and The Environment: Case Study of The Zambian Copperbelt.
 - The Impact of Rural Communities on Biodiversity (Flora And Fauna) and Assessment of Options for Sustainable Utilisation in SADC Countries.
 - Training on Air Pollution and Monitoring Systems for The SADC Region.
 - Cleaner Production.
 - Air Pollution Impact Network; Africa.

Kenya:

Moi University offers certificated courses in Environmental Impact Assessment/ Environmental Audit but this requires a first degree. There are no qualifications in environmental science offered at a lower level by the university.

Kenyatta University offers degree programmes in environmental science and management but no certificate courses.

Conclusion:

Many academic institutions provide degree programmes and not certificates in environmental management among their offerings. Other training providers offer mostly short courses to cover these competencies. The Polytechnic in New Zealand offers a 60 credit certificate qualification in environmental management. The field of environmental management is extremely wide and those institutions that do offer certificates (like those in the United States and Canada) focus on, or give emphasis to slightly different aspects. On the whole, this National Certificate: Environmental Management at NQF Level 5 is an entry level qualification that comprehensively covers the key concepts in the field.

ARTICULATION OPTIONS

Horizontal Articulation:

- ID 59201: National Certificate: Generic Management; NQF Level 5.
- ID 59325: National Certificate: Environmental Noise Control; NQF Level 5.
- ID 22901: National Certificate: Environmental Education, Training and Development Practice; NQF Level 5.

Vertical Articulation:

- Proposed National Certificate: Environmental.
- Management Qualifications; NQF Level 6.

MODERATION OPTIONS

- This Qualification and its Unit Standards will be internally assessed and externally moderated by a moderator registered by the relevant accredited ETQA or an ETQA that has a

Memorandum of Understanding with the relevant accredited ETQA. Providers should establish or refine existing moderation procedures and systems at their institutions with a view to aligning them with the requirements of the relevant ETQA.

- The learner's performance/results should be moderated by one or more external moderators. Moderators should report not only on the standard of achievement but also on the validity and reliability of the assessment strategies, design and criteria in relation to the Unit Standards and the purpose and Exit Level Outcomes of the Qualification.
- Moderators must be competent at the level of the Qualification and registered with the relevant accredited ETQA to ensure that the standard is consistent. Moderators must also be registered as assessors with the relevant ETQA. A relevant accredited ETQA will monitor and quality assure moderation and assessment according to the guidelines in the Qualification.
- Providers must be accredited to provide this Qualification with the relevant ETQA or ETQA that has a Memorandum of understanding in place with the relevant ETQA.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

- Assessors must be registered as assessors with a relevant accredited ETQA. Providers must also be accredited as providers with a relevant accredited ETQA. Providers will primarily use their own qualified staff as assessors but may, if they wish make use of tutors and/or outside accredited assessors or assessment agencies provided that the provider monitors the process.
- Internal and external assessors must have an appropriate qualification at least at the level of the Qualification or appropriate experience in Environmental Science and Environmental Management.

NOTES

N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	10622	Conduct communication within a business environment	Level 5	8
Fundamental	264456	Explain the biophysical environment	Level 5	10
Core	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Core	14927	Apply problem solving strategies	Level 4	4
Core	264457	Demonstrate an understanding of integrated water resource management (IWRM)	Level 4	12
Core	13649	Apply fundamental knowledge of environmental ethics to a field of work or study	Level 5	6
Core	244518	Apply specialist incident investigation techniques to a specific incident in a work environment	Level 5	6
Core	264461	Demonstrate an understanding of Integrated Waste Management	Level 5	8
Core	264459	Demonstrate an understanding of human sustainability	Level 5	8
Core	264455	Demonstrate an understanding of integrated environmental management analysis tools	Level 5	8
Core	116971	Demonstrate knowledge of pollution Incident management and remediation	Level 5	10
Core	244288	Demonstrate understanding of occupational health and safety legislation in the workplace	Level 5	8
Core	252022	Develop, implement and evaluate a project plan	Level 5	8
Core	264458	Explain the regulatory framework for environmental management	Level 5	8
Core	264454	Manage hazardous substances	Level 5	6
Elective	252026	Apply a systems approach to decision making	Level 5	6
Elective	15234	Apply efficient time management to the work of a department/division/section	Level 5	4

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	264460	Collect and transport waste	Level 5	6
Elective	264474	Demonstrate an understanding of waste generation and primary storage	Level 5	6
Elective	252033	Demonstrate ways of dealing with the effects of dreaded diseases and in particular HIV/AIDS	Level 5	8
Elective	264476	Dispose of waste	Level 5	6
Elective	264475	Treat and process waste	Level 5	8

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION**None**



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Demonstrate an understanding of integrated water resource management (IWRM)***

SAQA US ID	UNIT STANDARD TITLE		
264457	Demonstrate an understanding of integrated water resource management (IWRM)		
ORIGINATOR		PROVIDER	
SGB Environmental Science, Env Mght and Waste Mght			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Identify and explain the legislation pertaining to IWRM.

SPECIFIC OUTCOME 2

Explain the strategic approach to IWRM.

SPECIFIC OUTCOME 3

Explain the importance of public participation in IWRM.

SPECIFIC OUTCOME 4

Discuss the development of a Water Quality Management Plan (WQMP).

SPECIFIC OUTCOME 5

Discuss the Water Quality Management Approach (WQMA).

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Manage hazardous substances

SAQA US ID	UNIT STANDARD TITLE		
264454	Manage hazardous substances		
ORIGINATOR		PROVIDER	
SGB Environmental Science, Env Mght and Waste Mght			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Identify and classify hazardous substances and dangerous goods in accordance with statutory requirements.

SPECIFIC OUTCOME 2

Apply the statutory requirements relevant to the control and management of hazardous material.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of integrated environmental management analysis tools

SAQA US ID	UNIT STANDARD TITLE		
264455	Demonstrate an understanding of integrated environmental management analysis tools		
ORIGINATOR		PROVIDER	
SGB Environmental Science, Env Mght and Waste Mght			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the use of the environmental management tools for planning.

SPECIFIC OUTCOME 2

Explain the use of the environmental management tools for implementation.

SPECIFIC OUTCOME 3

Explain the use of the environmental management tools for checking.

SPECIFIC OUTCOME 4

Explain the use of the environmental management tools for stakeholder engagement.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Explain the biophysical environment***

SAQA US ID	UNIT STANDARD TITLE		
264456	Explain the biophysical environment		
ORIGINATOR			PROVIDER
SGB Environmental Science, Env Mght and Waste Mght			
FIELD	SUBFIELD		
10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Describe the physical components of the environment and their related concepts.

SPECIFIC OUTCOME 2

Explain biodiversity and its related aspects.

SPECIFIC OUTCOME 3

Explore the inter-relationships between the components and the systems.

SPECIFIC OUTCOME 4

Describe the challenges to the biophysical environment of South Africa.

SPECIFIC OUTCOME 5

Identify and explain environmental features on maps.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Fundamental	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Explain the regulatory framework for environmental management*

SAQA US ID	UNIT STANDARD TITLE		
264458	Explain the regulatory framework for environmental management		
ORIGINATOR	PROVIDER		
SGB Environmental Science, Env Mght and Waste Mght			
FIELD	SUBFIELD		
10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Describe the role of the Constitution in environmental law in the country.

SPECIFIC OUTCOME 2

Explain the impact of the National Environmental Management Act (NEMA) on the environment.

SPECIFIC OUTCOME 3

Identify and explain other legislation pertaining to the environment.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of human sustainability

SAQA US ID	UNIT STANDARD TITLE		
264459	Demonstrate an understanding of human sustainability		
ORIGINATOR	PROVIDER		
SGB Environmental Science, Env Mght and Waste Mght			
FIELD	SUBFIELD		
10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate knowledge of the dynamics of human-environment relationships.

SPECIFIC OUTCOME 2

Describe the influence of political, economic and social processes on the environment.

SPECIFIC OUTCOME 3

Demonstrate an understanding of the concept of human vulnerability.

SPECIFIC OUTCOME 4

Investigate alternative resources/ways to protect the environment and prevent depletion of vital resources.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Collect and transport waste

SAQA US ID	UNIT STANDARD TITLE		
264460	Collect and transport waste		
ORIGINATOR			PROVIDER
SGB Environmental Science, Env Mght and Waste Mght			
FIELD			SUBFIELD
10 - Physical, Mathematical, Computer and Life Sciences			Environmental Sciences
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the terminology and principles of waste collection and transportation.

SPECIFIC OUTCOME 2

Explain the activities and resources related to collection and transport of waste.

SPECIFIC OUTCOME 3

Apply regulatory requirements and performance standards for collection and transport of waste.

SPECIFIC OUTCOME 4

Identify and describe the potential impacts or environmental risks associated with deviations from performance standards.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of Integrated Waste Management

SAQA US ID	UNIT STANDARD TITLE		
264461	Demonstrate an understanding of Integrated Waste Management		
ORIGINATOR	PROVIDER		
SGB Environmental Science, Env Mght and Waste Mght			
FIELD	SUBFIELD		
10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Demonstrate an understanding of waste management.

SPECIFIC OUTCOME 2

Explain the regulatory framework governing waste management.

SPECIFIC OUTCOME 3

Explain the waste cycle.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate an understanding of waste generation and primary storage*

SAQA US ID	UNIT STANDARD TITLE		
264474	Demonstrate an understanding of waste generation and primary storage		
ORIGINATOR	PROVIDER		
SGB Environmental Science, Env Mght and Waste Mght			
FIELD	SUBFIELD		
10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the terminology and principles of waste generation and primary storage.

SPECIFIC OUTCOME 2

Explain the activities and resources related to generation and primary storage of waste.

SPECIFIC OUTCOME 3

Apply regulatory requirements and performance standards for generation and storage of waste.

SPECIFIC OUTCOME 4

Identify and describe the potential impacts or environmental risks associated with deviations from performance standards.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Treat and process waste

SAQA US ID	UNIT STANDARD TITLE		
264475	Treat and process waste		
ORIGINATOR			PROVIDER
SGB Environmental Science, Env Mght and Waste Mght			
FIELD			SUBFIELD
10 - Physical, Mathematical, Computer and Life Sciences			Environmental Sciences
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the terminology and principles pertaining to the treatment and processing of waste.

SPECIFIC OUTCOME 2

Explain the activities and resources related to treatment and processing of waste.

SPECIFIC OUTCOME 3

Apply regulatory requirements and performance standards for the treatment and processing of waste.

SPECIFIC OUTCOME 4

Identify and describe the potential impacts or environmental risks associated with deviations from performance standards.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	66789	National Certificate: Environmental Management	Level 5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Dispose of waste**

SAQA US ID	UNIT STANDARD TITLE		
264476	Dispose of waste		
ORIGINATOR			PROVIDER
SGB Environmental Science, Env Mght and Waste Mght			
FIELD			SUBFIELD
10 - Physical, Mathematical, Computer and Life Sciences			Environmental Sciences
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the terminology and principles of waste disposal.

SPECIFIC OUTCOME 2

Explain the activities and resources related to waste disposal.

SPECIFIC OUTCOME 3

Apply regulatory requirements and performance standards for waste disposal.

SPECIFIC OUTCOME 4

Explain the minimum requirements for waste disposal.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	66789	National Certificate: Environmental Management	Level 5