Title	**Contribute to WHS Hazard Identification and Risk Assessment for work sites** *The learning and assessment activities in this unit standard will applied in the elected field of Sustainable Energy: Micro Hydro Power, Solar, Hybrid Wind, Biomass, Energy Management*				
Code	**CG4002**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard is for persons who work, or intend to work, in the Sustainable Energy sector. Persons credited with this unit standard are able to demonstrate skills and knowledge required to contribute to Workplace Health and Safety (WHS) hazard identification and risk assessment to promote the maintenance of WHS in a work site which may be in the outer islands of a Pacific Island Country, inland rural area or above or below water surfaces. Persons credited with this unit standard are able to: • Access sources of information and data about a planned work site for the conduct of work activities and identify existing or potential hazardous task or conditions • Gather information about hazards on a work site and surrounding environment • Contribute to work site risk assessment

Classification	***Safety***

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • knowledge of basic principles of incident causation and injury processes • understanding of the concepts of risks, factors that affect risk and difference between a hazard and a risk • knowledge of the consequences and likelihood of risks associated with hazards on a work site

	• workplace knowledge on internal and external sources for WHS information and data such as: notification of incidents, record keeping, reporting of incidents, specific hazards • understanding of generic hazard and risk checklists, and risk ranking processes • knowledge of Pacific local country and regional WHS legislation, codes of practice, and standards • knowledge of types and characteristics of major physical and environmental hazards which may be present in the work location in a remote, rural, outer island area in the Pacific region • written skills to prepare clear, concise and comprehensive notes and memos for a range of target groups including: employees, WHS committees, development partners, community groups, managers, supervisors • organisational and time management skills to sequence tasks and meet timelines • Communication skills to effectively convey messages on hazard identification and risk assessment.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

Workplace Health and Safety is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

Work location includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

Hazard is a danger or risk

Risk is the chance of something happening that will result in injury or damage which are measured in terms of consequences (injury or damage) and likelihood of consequence.

Safety is the condition of being protected from or unlikely to cause danger, risk, or injury

Stakeholders and specialists may include personnel from international sources (e.g. Pacific Tsunami Warning Center), national agencies (e.g.

meteorological services, bureau of statistics), sub-national sources (e.g. district officers), and community members
Information and data may include: employees, hazard, incident reports, minutes of meetings, photographs, drawings, electronic live mapping, notes

2. *Legislation*
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments

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Outcomes and Evidence Requirements

Outcome 1
Access sources of information and data about a planned work site for the conduct of work activities and identify existing or potential hazardous task or conditions

Evidence Requirements
1.1 Access external sources of information and data to assist in identifying hazardous tasks or conditions for the planned/proposed work site in rural, remote or outer island areas
1.2 Review workplace sources of information and data to assist in identification of hazardous tasks or conditions for the planned/proposed work site
1.3 Seek input from stakeholders, key personnel and specialists to clarify and confirm issues relating to identified hazards
1.4 Seek additional information, expertise or specialist advice from within or external to the workplace when the limit of own skills and knowledge is reached
1.5 Contribute to the support of WHS personnel and others in accessing sources of information and date regarding hazard identification for work sites.

Outcome 2
Gather information about hazards on a work site and surrounding environment

Evidence Requirements
2.1 Contribute to the selection of hazard identification tools, techniques, processes and methods suitable for the work site
2.2 Conduct a work site inspection to collect further information about hazards and associated risks as required
2.3 Consult with local personnel on known and potential hazards and hazardous situations
2.4 Report results of opinions and interpretations to stakeholders in an appropriate format
2.5 Provide information and assistance to persons conducting work site inspections or testing

Outcome 3
Contribute to work site risk assessment

3.1 Identify and prioritise hazardous tasks or conditions requiring controls action in consultation with stakeholders, taking account of recognised standards

3.2 Assess risks associated with identified hazards on the work site and surrounding environment in consultation with stakeholders and take into account effectiveness of existing controls
3.3 Use appropriate risk assessment methods to undertake a risk assessment
3.4 Record risks according to workplace procedures and workplace health and safety Acts, regulations and codes of practice
3.5 Provide information and assistance to other persons conducting a risk assessment on a work site
3.6. Identify, categorise and assess individual risk factors as a contribution to overall risk assessment
3.7. Document outcomes of the risk assessment process using clear and appropriate language and structure according to organization and stakeholder requirements

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

Title	**Coordinate effective communications** *The learning and assessment activities in this unit standard will applied in the elected field of Energy Management for Sustainable Energy*				
Code	**CG4102**	**Level**	**4**	**Credits**	**6**

Purpose	This unit describes the skills and knowledge required to communicate effectively and appropriately within Pacific Island Countries to coordinate effective communications including workplace meetings. This unit standard is appropriate for people who are currently in the workforce or intend to gain work. Persons credited with this standard are able to: • Plan and prepare for communication • Coordinate team communications • Coordinate workplace meetings • Represent team views

Classification	*Participation and Governance*

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • knowledge of organization policy and procedures • knowledge of meeting communication principles and practices • knowledge of relevant protocols and cultural responsibilities when communicating with Pacific Island stakeholders • written skills to take clear and logical minutes of meetings • facilitation skills for conduct of effective meetings • facilitation skills for good communication channels with various stakeholders • skills to present information in an appropriate format for the community • skills and knowledge to outline information gathering, analysis and presentation methods

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*
Communications may include face to face discussions, letters, telephone, facsimile, time sheets, radios, e-mail, social media, memos, workplace meetings, reports

Stakeholders may include: project sponsors/funding bodies/development partners, industry, government agencies, Ministers, general public, steering committee members, organisational management and team members.

Appropriate communication protocols will be relevant to the Pacific region and specific Pacific Island country and/or community. The Pacific Island protocols will depend on the relationships of those involved in the communications

2 *Legislation*
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Plan and prepare for communication

Evidence Requirements
1.1 Communication requirements are identified from analysis of probable work and project requirements including potential audiences/stakeholders
1.2 Communication network is planned and established to ensure reliable and cost effective communications in accordance with project and organisational requirements
1.3 Teams and individual roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training to facilitate effective communications

Outcome 2
Coordinate team communications

Evidence Requirements

2.1 Forums, including briefings, meetings and committees, are scheduled as required in accordance with organization and/or project requirements

2.2 Communications network information is provided to team members to ensure maximum efficiency in accordance with forum/organization and/or project requirements

2.3 Team members are encouraged to participate in the creation of a participatory environment in which all views are welcomed and considered in accordance appropriate forum/organization and cultural practices

Outcome 3

Coordinate workplace meetings

Evidence Requirements

3.1 Meetings are planned and organized including distribution and clarification of agenda, notification of date, venue and required attendees and administration requirements, in accordance with organization and/or project requirements

3.2 Format and rules of meetings are identified, agreed, established and applied in accordance with requirements

3.3 Views of all parties are identified and presented, including agreement and dissent, to obtain a balanced position

3.4 Outcomes and agreed action plans are recorded and details of next meeting confirmed before closing in accordance with organization/forum requirements

Outcome 4

Represent team views

Evidence Requirements

4.1 Team viewpoint is determined, including possible options and acceptable alternatives or compromises prior to verbal or visual presentation

4.2 Team viewpoints are presented in clear, concise and logical manner accepting the need for rational and productive debate

4.3 Decisions and outcomes are conveyed to team members to accurately portray their position

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Administer and support projects in Sustainable Energy** *The learning and assessment activities in this unit standard will applied in the elected field of Energy Management.*				
Code	**CG4103**	**Level**	**4**	**Credits**	**7**

Purpose	This unit describes skills and knowledge required to perform the activities associated with the administrative aspects of a project, such as design, implementation, measurement, monitoring, reporting, and winding up the project on completion. This unit standard applies to individuals who work under the supervision or in consultation with an experienced project manager. Persons credited with this standard are able to: • Plan project administration • Coordinate project administration • Finalize and review project administration

Classification	*Participation and Governance*

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • knowledge of legislation that may affect components of project administration • skills to identify and apply relevant organizational policies and procedures in project administration activities • skills to use a range of features within digital applications to apply project activities • knowledge and skills in project management and planning tools • communication, collaboration and cooperation skills to achieve joint outcomes • project skills to apply formal processes when planning project tasks, producing plans with logically sequenced steps, reflecting an awareness of time constraints

	• monitoring skills to assess progress of project plans and makes adjustments, if necessary • skills to perform calculations necessary to estimate timeframes and monitor progress against predetermined budget • high-level written skills to develop project documents including log frames, schedules and strategies • High-level written skills to produce progress and final reports which comply with structure, formal and language as required by development partners, organization and stakeholders.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1. **Project design document** is an outline of the project objectives, outcomes, key result areas/indicators, schedule and strategies and activities including monitoring and evaluation, risk management strategies and exit strategies.

Project management tools may include: project management software and other tools such as Gantt and bar charts, Program Evaluation and Review Technique (PERT) charts, spreadsheets, cost-benefit analysis.

Stakeholders may include: communities, project sponsors/funding bodies/development partners, industry, government agencies, Ministers, general public, steering committee members, organisational management and team members.

Project plan will include some or all of the following: budget and cost estimates, expected outcomes which are measurable benefits of the project, inclusions and exclusions from the project, logframe, milestones, objectives, purpose, performance criteria/indicators, human and physical resources, project implementation strategy, quality standards for the project, risk management strategy, schedule/timeline.

Project data may include: financial data including costs, expenditure, income generated, purchases, test results, records of time spent on the project and progress in completing project activities, correspondence, and project outcomes.

Solutions to problems may include: reducing costs, researching and applying more efficient methods of completing project tasks, seeking further resources to meet deadlines, negotiating an extension of deadline or redefining completion or quantities of quality of outcomes, sharing of ideas to gain improvements to work undertaken within the project, outsourcing aspects of the project, changing roles and responsibilities within the project team.

2 *Legislation*
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Plan project administration

Evidence Requirement
1.1 Identify and record the purpose, scope and objectives of project
1.2 Develop project plans identifying project activities and key administrative milestones and timelines in accordance with the requirements of the project brief/contract and in consultation with stakeholders
1.3 Develop a project log-frame to reflect the project planning and implementation
1.3 Identify and address factors that affect timeframes in project planning to ensure timeframes are realistic and achievable
1.4 Link project budgets to key outcomes within projects and incorporate reporting mechanisms to ensure payments are made/received as outcomes are achieved
1.5 Identify monitoring and reporting arrangements for project activities and budgets within project plans in accordance with organizational, statutory, and auditing requirements of supporting partners

Outcome 2
Coordinate project administration

Evidence Requirements
2.1 Allocate and monitor tasks and resources in accordance with project requirements
2.2 Detail project expenditure in financial control systems, and monitor against project budgets in accordance with project design document
2.3 Monitor project timeframes and milestones and report to designated person/s in accordance with organizational and project requirements
2.4 Maintain project records in accordance with project and organizational requirements

Outcome 3
Finalize and review project administration

Evidence Requirements
3.1 Project deliverables are completed to the required standard in the required timeframe.

3.2 Recordkeeping associated with the project is completed and archived as required by the project plan.
3.3 Project process is evaluated, issues identified and recommendations made for continuous improvement.
3.4 Prepare written project reports to the required standard, containing required information and using agreed style, voice and format.
3.5 Project hand-over of deliverables and return of borrowed/unused materials are completed in accordance with the project plan and organizational procedures

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Supervise and coordinate energy sector work activities** *The learning and assessment activities in this unit standard will applied in the elected field of Sustainable Energy: Energy Management; Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4102**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to supervise and coordinate work activities in the energy sector. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • Prepare to supervise and coordinate work activities in various work locations • Supervise and coordinate work activities in various work locations • Document supervision and coordination activities

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant work functions in the energy sector • Knowledge of specifications and work instructions pertaining to the relevant work functions in the energy sector • Use of analytical techniques in problem solving • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving and dispute resolution • Effective instruction skills and knowledge of methods

	• Knowledge of OHS legislation, organisation policies, goals, objectives and plans that relate to work activities in the energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- Supervising and coordinating work activities shall be demonstrated in any of the following energy sector disciplines: Automation technologies, Computers, Data Communications, Electrical, Electrical Machines, Electronics, Fire protection, Instrumentation, Refrigeration and Air Conditioning, Renewable / sustainable energy, Security technology.

- Analytical techniques in problem solving include: Brainstorming; Fishbone diagrams/cause and effect diagrams; Logic trees; Process logic/process requirements; Similarity/difference analysis; SWOT analysis.

- OHS/WHS is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

- Work location includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 *Legislation*
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to supervise and coordinate work activities in various work locations

Evidence Requirements

1.1 WHS/OHS processes and procedures for a given work area are identified, obtained and understood.
1.2 Job specification and requirements are obtained and understood
1.3 Plant, materials and skills needed for the work are established from specifications, and relevant documentation
1.4 Plant, materials, personnel and others needed for the work are accessed in accordance with established procedure.

Outcome 2
Supervise and coordinate work activities in various work locations

Evidence requirements
2.1 OHS policies, procedures and programs are implemented and monitored
2.2 Guidance and work instructions are given to appropriate personnel to ensure the various aspects of the work are sequenced and completed in accordance with job specifications and requirements
2.3 Cooperation is sought from others involved in the work to ensure the various aspects of the work are coordinated effectively.
2.4 Work progress is monitored against schedules, job specifications and requirements.
2.5 Conflict issues at the work site are dealt with in accordance with acceptable cultural protocols and established procedures.
2.6 Requested variations to job specifications are dealt with in accordance with established procedures and processes.
2.7 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes.

Outcome 3
Document supervision and coordination activities
Evidence Requirements
3.1 Job records are maintained in accordance with established procedures
3.2 Processes are followed to ensure activities are carried out to established procedures

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

Title	Describe and use logical framework analysis and cost-benefit analysis to appraise Energy projects				
Code	**SE4103**	**Level**	**4**	**Credits**	**6**

Purpose	This unit describes skills and knowledge required to plan, organise and conduct a cost-benefit-analysis and logical framework analysis (LFA) as means to appraise energy project. This unit standard applies to individuals who work under the supervision of an experienced project manager. Persons credited with this standard are able to: • Identify the objectives of a cost-benefit analysis and a LFA • Identify costs and benefits for energy options • Value identified costs and benefits for energy/project options • Identify and explain steps involved in LFA for energy project design • Analyze information and communicate it to the relevant stakeholders

Classification	Resources

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of with-and-without analysis • Knowledge of common methods to value costs and benefits • Analytical skills to assess qualitative and quantitative information • Mathematical skills to apply formula for discounting and aggregating benefits and costs to obtain present values • Communication and reporting skills • High-level written skills to produce progress and final reports which comply with structure, formal and language as required by development partners, organization and stakeholders.

	• Knowledge of methods to estimate costs of impacts on immaterial assets.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

Cost-benefit analysis (CBA): A systematic process for assessing, calculating and comparing the advantages (benefits) and disadvantages (costs) of an activity. This includes those costs and benefits that cannot be quantified in monetary terms but are nonetheless valued by society, for example those relating to the environment, safety and nature.

Logical Framework Analysis/Approach (LFA) refers to as a tool for managing development processes. A specific way of structuring the main elements in a project, highlighting the logical linkages between inputs, planned activities and expected results. The LFA involves situation/stakeholder analysis, problem analysis, objective analysis and strategic analysis

Logical Framework (Matrix) refers to a matrix comprising the results of the LFA. It consists of a matrix with four columns and four (or more) rows, which summaries the key elements of a project plan.

Cost: Monetary or non-monetary loss due to an action taken/not taken or decision made/not made (eg: loss avoided by the implementation of the action taken or decision made).

Benefit: Monetary or non-monetary gain received because of an action taken or a decision made.

With-and-without analysis: Comparison of benefits and costs 'without' the proposed activity (what would happen in any event) and benefits and costs 'with' the activity (which would cause some change).

Opportunity cost: The economic cost of a resource, measured as the cost of giving up the nearest alternative use; in other words, the value of the next best option that must be surrendered when scarce resources are used for one purpose instead of another.

Stakeholders may include: communities, project sponsors/funding bodies/development partners, industry, government agencies, Ministers, general public, steering committee members, organisational management and team members.

Common methods to value costs and benefits include: market price; cost-based approaches, production function approach, surrogate market approach, stated preference approach.

Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements
Outcome 1
Identify the objectives of a cost-benefit analysis and a LFA
Evidence Requirement
1.1 Identify and record the purpose, scope and objectives of project/energy options
1.2 Consult with stakeholders and relevant documents to confirm the problem and alternatives
1.3 Plan and prepare communications for communities and stakeholders on proposed actions (alternative project/energy options)
1.4 Define the CBA and LFA objectives

Outcome 2
Identify costs and benefits for energy options
Evidence Requirements
2.1 Identify and describe the inputs, outputs and outcomes/impacts relevant to the project problem
2.2 Identify costs and benefits relevant to project inputs and outputs (including opportunity costs)
2.3 Identify and describe factors affecting measuring benefits and costs

Outcome 3
Value identified costs and benefits for energy/project options
Evidence Requirements
3.1. Explain alternative methods/common approaches to quantify the costs and benefits for each of the energy/project options
3.2 Identify, select and apply an appropriate cost-benefit-analysis
3.3 Summarize the costs and benefits using an appropriate method

Outcome 4
Identify and explain steps involved in LFA for energy project design
Evidence Required
4.1 Explain what a framework is and identify the different types of frameworks
4.2 Explain the evolution of the logical framework
4.3 Differentiate a log frame from a LFA
4.4 Identify and explain key steps in the LFA
4.5 Identify and describe strengths and limitations of the LFA
4.6 Discuss the Log frame (Matrix) and M&E for project appraisal

Outcome 5

Analyze information and communicate it to the relevant stakeholders

Evidence Requirements

4.1 Analyze the information and develop a recommendation on the energy/project option(s) to pursue

4.2 Prepare a clear and defensible written argument on the energy/project option(s) selected

4.3 Prepare a written report which is well structured and in a format and language which provides details of the recommended option(s) with the key supporting findings

4.4 Present the results of the analysis (both CBA and LFA) to the relevant stakeholders

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

Title	**Conduct a sustainable energy audit** *The learning and assessment activities in this unit standard will applied in the elected field of Energy Management*				
Code	**SE4104**	**Level**	**4**	**Credits**	**6**

Purpose	This unit describes the skills and knowledge required to conduct an audit for the specific resource of energy in an organisation or community and to prepare recommendations for a reduction of, and more efficient use of energy. This unit standard is appropriate for people who are experienced and currently working in energy sector. Persons credited with this standard are able to: • Identify all sources and uses of energy in process • Calculate theoretical use of energy • Measure actual use of energy • Develop strategies for reducing the use of energy • Prepare a recommendation

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Boundaries for the sustainable energy audit • Knowledge and skills in cost/benefit analyses • Knowledge of relevant legislation, energy regulations, organization policies, goals, objectives and plans relevant to energy activities • Skills to apply energy balancing techniques and methods of measuring actual process/flows

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- **Energy/energy type** includes one or more of: operational heating and cooling, motive energy, lighting, waste energy

- **Energy intensity** includes one or more of the required: temperature, power, pressure

- **OHS/WHS** is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

- **Site** includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area

- *Legislation*
  All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Identify all sources and uses of energy in process

Evidence Requirements
1.1 Identify all sources of energy external to the site
1.2 Identify all sources of energy within the site
1.3 Identify all uses of energy by process unit
1.4 Identify energy type and intensity required by each process unit

Outcome 2
Calculate theoretical use of energy

Evidence Requirements
2.1 Calculate theoretical net use of energy by type and intensity for each process unit
2.2 Calculate overall energy balance for process/site

2.3 Evaluate the need for energy consumption by process and units within the process compared to alternative processes/units

Outcome 3
Measure actual use of energy

Evidence Requirements
3.1 Determine actual net energy use for overall process/site
3.2 Determine actual net energy use for each process unit
3.3 Calculate difference between theoretical and actual energy use by unit and overall
3.4 Identify actual energy type used by each process unit

Outcome 4
Develop strategies for reducing the use of energy

Evidence Requirements
4.1 Rank units by difference between theoretical and actual energy use
4.2 Rank units by actual energy use
4.3 Identify units using higher intensity energy than required
4.4 Develop strategies to reduce energy consumption and/or use lower intensity energy

Outcome 5
P*repare a recommendation*

Evidence Requirements
5.1 Consult with key stakeholders
5.2 Identify strategies required to meet regulatory or similar requirements
5.3 Rank strategies by benefit/cost ratio
5.4 Short-list preferred energy reduction strategies
5.5 Prepare recommendation for improving energy usage

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Planning and managing in the energy sector**				
Code	**SE4105**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to conduct an audit for the specific resource of energy in an organisation or community and to prepare recommendations for a reduction of, and more efficient use of energy. This unit standard is appropriate for people who are experienced and currently working in energy sector. Persons credited with this standard are able to: • Conduct basic energy management, planning and coordination • Describe various types of energy regulations and the principles of regulation • Plan energy policies within relevant regulatory frameworks • Determine energy database including energy pricing and information • Explain Energy Project Planning and Management

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant maintenance functions for RE systems • Knowledge of principles of general management • Knowledge of energy policies and regulatory frameworks • Knowledge of and how to determine energy balances and energy pricing • Knowledge of project designing, implementation and evaluation tools

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- **Energy (project) management** refers to systematic and strategic planning and operation of energy production units, the energy transmission/distribution and energy consumption units.
- **Energy Database** refers to energy data and information be administered and store in an electronic form (database).
- **Energy Policies** refers the laid out guidelines or statements in which a government or an institution has decided to address issues of energy development including energy production, transmission/distribution and consumption.
- **Regulatory Framework** refers to the existence of the necessary infrastructure which supports the control, direction or implementation of a proposed or adopted course of action, rule, principle or law.

2 Legislation

All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1

Conduct basic energy management, planning and coordination

Evidence Requirements

1.1 Identify and explain basic energy concepts and principles

1.2 Identify and describe the drivers for energy management and energy efficiency in and organization or institution;

1.3 Explain energy consumption and its impact on costs;

1.4 Identify energy efficiency opportunities;

1.5 Explain energy use and baseline performance;

1.6 Analyze energy/electricity bills;

1.7 Determine energy management systems and standards

Outcome 2

Describe various types of energy regulations and the principles of regulation

Evidence requirements

2.1 Describe types of energy regulation with their respective advantages and disadvantages

2.2 Determine authoritative and objective analysis and information on issues pertaining to energy systems;
2.3 Describe the principles of independence, transparency and investor and consumer protection in energy regulation
2.4 Determine energy sector economic/environmental/strategic assessment tools including energy auditing for energy intervention.
2.5 Describe the importance of Energy Conservation & Efficiency Advocacy
2.6 Identify the need to develop energy policies and strategies for RE, conventional energy and EE and contributes to the development and updating of Regulatory frameworks

Outcome 3
Plan energy policies within relevant regulatory frameworks
Evidence requirements
3.1 Describe basic energy sectors economic/environmental analysis
3.2 Determine authoritative and objective analysis and information on issues pertaining to energy systems;
3.3 Explain approaches in working towards meeting national and regional energy development objectives;
3.4 Determine energy sector economic/environmental/strategic assessment tools including energy auditing for energy intervention.
3.5 Describe the importance of Energy Conservation & Efficiency Advocacy
3.6 Identify the need to develop and develop energy policies and strategies for RE, conventional energy and EE and contributes to the development and updating of Regulatory frameworks

Outcome 4
Determine energy database including energy pricing and information
Evidence Requirements
4.1 Describe the importance and processes of Energy Project research and information/data gathering;
4.2 Describe the various factors that affect energy pricing
4.3 Collect relevant energy data/information, develop appropriate database for such data to be stored, populate and manage the database;
4.4 Analyze and forecast technical and statistical data
4.5 Explain the importance of collecting and compiling energy prices using available historical supply, demand, and pricing data;
4.6 Analyze energy prices (RE and Petroleum) using simple statistic on excel and draw charts from reporting purposes;

Outcome 5
Explain Energy Project Planning and Management
Evidence Requirements
5.1 Explain the importance of and develop monitoring and evaluation (M&E) plan for energy programs/projects;
5.2 Explain the importance of using project development and designing, including logical framework analysis project proposal drafting.
5.3 Appraise and evaluate project progress against established goals, timelines and objectives – from a log frame matrix

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Source and purchase material/parts for installation or service jobs** *The learning and assessment activities in this unit standard will applied in the elected field of Renewable Energy from: Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**CG4001**	**Level**	**4**	**Credits**	**4**

Purpose	This unit describes the skills and knowledge required to source and purchase/order materials/parts for installation and service jobs. It encompasses following job specifications, using manufacturer catalogues, making telephone, internet or email enquiries, selecting compliance materials, pricing materials and labour costs and completing necessary purchasing documentation. This unit standard is appropriate for people who are currently in the workforce in the energy sector. Persons credited with this standard are able to: • Establish the extent of the materials to be purchased • Source and purchase materials • Document material purchases

Classification	Resources

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Technical literacy and communication skills sufficient to interpret and apply common industry terminology (energy sector) for sourcing and purchasing materials and parts • Skills in preparing purchasing documentation accurately • Knowledge on appropriate methods of access to information required to source materials and parts for purchasing • Customer relations skills • Methods for recording and maintaining work records related to purchasing materials/parts

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

Explanatory notes

This unit must be demonstrated in relation to sourcing and purchasing materials/parts In any of the following electrotechnology disciplines.

Automation technologies
Computers
Data Communications
Electrical
Electrical Machines
Electronics
Fire Protection
Instrumentation
Refrigeration and Air Conditioning
Renewable/sustainable energy, and
Security technology

- Customer relations protocols encompass: purpose of customer relations, procedures for dealing with customers, dealing with customers issues.
- Communicating with personnel encompasses: oral communications, written procedures and work instructions, communicating with suppliers, communicating with customers.
- Enterprise purchasing system encompassing: purchasing process, common suppliers, authorities to purchase

Legislation

All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1

Establish the extent of the materials to be purchased

Evidence Requirements

1.1 OHS procedures for a given work area are identified, obtained and understood
1.2 Established OHS risk control measures and procedures are followed

1.3 The extent of installation or service work is determined from job specifications drawings or results of service calls
1.4 Materials required for the work are determined from job specifications or requirements resulting from service calls
1.5 Materials or parts required are documented in accordance with established routine procedures

Outcome 2
Source and purchase materials

Evidence Requirements
2.1 Sources of materials are obtained based on availability and price using catalogues, computers and/or telephone in accordance with established routine procedures
2.2 Approval to purchase alternative materials/parts is sought from an appropriately qualified and authorized person
2.3 Price for the supply of materials/parts, particularly non-standard high cost items, is sought in accordance with routine established procedures
2.4 Approval to purchase materials or parts is obtained in writing from the customer or other authorized person in accordance with established procedures.
2.5 Purchases are initiated based on price and availability of materials/parts within the required timeframe and in accordance with established procedures

Outcome 3
Document material purchases

Evidence requirements
3.1 Material or part purchases are allocated against the appropriate jobs
3.2 Material or part purchases are documented in accordance with established routine procedures (Note: prices to include discounts, GST and delivery costs)

Planned review date	30th April 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April 2017	N/A

Title	**Contribute to WHS Hazard Identification and Risk Assessment for work sites** *The learning and assessment activities in this unit standard will applied in the elected field of Sustainable Energy: Micro Hydro Power, Solar, Hybrid Wind, Biomass, Energy Management*				
Code	**CG4002**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard is for persons who work, or intend to work, in the Sustainable Energy sector. Persons credited with this unit standard are able to demonstrate skills and knowledge required to contribute to Workplace Health and Safety (WHS) hazard identification and risk assessment to promote the maintenance of WHS in a work site which may be in the outer islands of a Pacific Island Country, inland rural area or above or below water surfaces. Persons credited with this unit standard are able to: • Access sources of information and data about a planned work site for the conduct of work activities and identify existing or potential hazardous task or conditions • Gather information about hazards on a work site and surrounding environment • Contribute to work site risk assessment

Classification	***Safety***

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • knowledge of basic principles of incident causation and injury processes • understanding of the concepts of risks, factors that affect risk and difference between a hazard and a risk • knowledge of the consequences and likelihood of risks associated with hazards on a work site

	• workplace knowledge on internal and external sources for WHS information and data such as: notification of incidents, record keeping, reporting of incidents, specific hazards • understanding of generic hazard and risk checklists, and risk ranking processes • knowledge of Pacific local country and regional WHS legislation, codes of practice, and standards • knowledge of types and characteristics of major physical and environmental hazards which may be present in the work location in a remote, rural, outer island area in the Pacific region • written skills to prepare clear, concise and comprehensive notes and memos for a range of target groups including: employees, WHS committees, development partners, community groups, managers, supervisors • organisational and time management skills to sequence tasks and meet timelines • Communication skills to effectively convey messages on hazard identification and risk assessment.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

Workplace Health and Safety is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

Work location includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

Hazard is a danger or risk

Risk is the chance of something happening that will result in injury or damage which are measured in terms of consequences (injury or damage) and likelihood of consequence.

Safety is the condition of being protected from or unlikely to cause danger, risk, or injury

Stakeholders and specialists may include personnel from international sources (e.g. Pacific Tsunami Warning Center), national agencies (e.g.

meteorological services, bureau of statistics), sub-national sources (e.g. district officers), and community members
Information and data may include: employees, hazard, incident reports, minutes of meetings, photographs, drawings, electronic live mapping, notes

2. Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments

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Outcomes and Evidence Requirements

Outcome 1
Access sources of information and data about a planned work site for the conduct of work activities and identify existing or potential hazardous task or conditions

Evidence Requirements
1.1 Access external sources of information and data to assist in identifying hazardous tasks or conditions for the planned/proposed work site in rural, remote or outer island areas
1.2 Review workplace sources of information and data to assist in identification of hazardous tasks or conditions for the planned/proposed work site
1.3 Seek input from stakeholders, key personnel and specialists to clarify and confirm issues relating to identified hazards
1.4 Seek additional information, expertise or specialist advice from within or external to the workplace when the limit of own skills and knowledge is reached
1.5 Contribute to the support of WHS personnel and others in accessing sources of information and date regarding hazard identification for work sites.

Outcome 2
Gather information about hazards on a work site and surrounding environment

Evidence Requirements
2.1 Contribute to the selection of hazard identification tools, techniques, processes and methods suitable for the work site
2.2 Conduct a work site inspection to collect further information about hazards and associated risks as required
2.3 Consult with local personnel on known and potential hazards and hazardous situations
2.4 Report results of opinions and interpretations to stakeholders in an appropriate format
2.5 Provide information and assistance to persons conducting work site inspections or testing

Outcome 3
Contribute to work site risk assessment

3.1 Identify and prioritise hazardous tasks or conditions requiring controls action in consultation with stakeholders, taking account of recognised standards

3.2 Assess risks associated with identified hazards on the work site and surrounding environment in consultation with stakeholders and take into account effectiveness of existing controls
3.3 Use appropriate risk assessment methods to undertake a risk assessment
3.4 Record risks according to workplace procedures and workplace health and safety Acts, regulations and codes of practice
3.5 Provide information and assistance to other persons conducting a risk assessment on a work site
3.6. Identify, categorise and assess individual risk factors as a contribution to overall risk assessment
3.7. Document outcomes of the risk assessment process using clear and appropriate language and structure according to organization and stakeholder requirements

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th Aril, 2017	N/A

BIOMASS

ELECTIVE

Title	**Supervise and coordinate energy sector work activities** *The learning and assessment activities in this unit standard will applied in the elected field of Sustainable Energy: Energy Management; Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4102**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to supervise and coordinate work activities in the energy sector. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • Prepare to supervise and coordinate work activities in various work locations • Supervise and coordinate work activities in various work locations • Document supervision and coordination activities

Classification	Core

Critical health and safety prerequisites	All training and assessment activities must be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant work functions in the energy sector • Knowledge of specifications and work instructions pertaining to the relevant work functions in the energy sector • Use of analytical techniques in problem solving • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving and dispute resolution • Effective instruction skills and knowledge of methods

	• Knowledge of OHS legislation, organisation policies, goals, objectives and plans that relate to work activities in the energy sector.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- Supervising and coordinating work activities shall be demonstrated in any of the following energy sector disciplines: Automation technologies, Computers, Data Communications, Electrical, Electrical Machines, Electronics, Fire protection, Instrumentation, Refrigeration and Air Conditioning, Renewable / sustainable energy, Security technology.

- Analytical techniques in problem solving include: Brainstorming; Fishbone diagrams/cause and effect diagrams; Logic trees; Process logic/process requirements; Similarity/difference analysis; SWOT analysis.

- OHS/WHS is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

- Work location includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 *Legislation*

All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1

Prepare to supervise and coordinate work activities in various work locations

Evidence Requirements

1.1 WHS/OHS processes and procedures for a given work area are identified, obtained and understood.
1.2 Job specification and requirements are obtained and understood
1.3 Plant, materials and skills needed for the work are established from specifications, and relevant documentation
1.4 Plant, materials, personnel and others needed for the work are accessed in accordance with established procedure.

Outcome 2
Supervise and coordinate work activities in various work locations

Evidence requirements
2.1 OHS policies, procedures and programs are implemented and monitored
2.2 Guidance and work instructions are given to appropriate personnel to ensure the various aspects of the work are sequenced and completed in accordance with job specifications and requirements
2.3 Cooperation is sought from others involved in the work to ensure the various aspects of the work are coordinated effectively.
2.4 Work progress is monitored against schedules, job specifications and requirements.
2.5 Conflict issues at the work site are dealt with in accordance with acceptable cultural protocols and established procedures.
2.6 Requested variations to job specifications are dealt with in accordance with established procedures and processes.
2.7 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes.

Outcome 3
Document supervision and coordination activities
Evidence Requirements
3.1 Job records are maintained in accordance with established procedures
3.2 Processes are followed to ensure activities are carried out to established procedures

Planned Review Date	30th April 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April 2017	N/A

Title	**Apply tools, equipment & materials in complex tasks in RE & EE for designing, installing and commissioning (Biogas System)**				
Code	**SE4301B**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard involves working with renewable energy systems tools, equipment and materials used for biogas systems Persons credited with this unit standard are able to; • Document supervision and coordination activities; • Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of biogas system. • Demonstrate technical skills in designing, installing and commissioning of biogas system

Classification	Core Skills

Critical health and safety prerequisites	All training and assessment activities must be in accordance with health and safety legislation and related regulations

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of the basic hand tools and equipment • Knowledge of basic operation of a biogas system • Knowledge of basic civil works and/or mechanical works involved in biogas system • Knowledge of the environmental and social impacts of biogas system development

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.

- Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of oxygen. Biogas can be produced from raw materials such as agricultural waste, manure, municipal waste, plant material, sewage, green waste or food waste. Biogas is principally a mixture of methane (CH_4) and carbon dioxide (CO_2) along with other trace gases. A biogas plant is an anaerobic digester that produces biogas from feedstock mentioned earlier.
- Civil Works refers to work that involves civil engineering construction of concrete base and digester and ducting for the biogas production
- Commissioning refers to the analysing and testing of all parts of a biogas system for functionality and efficiency.

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Document supervision and coordination activities

Evidence requirements
1.1. Demonstrate the use of different types of planning and designing tools, equipment and materials for biogas systems
1.2. Demonstrate uses and functions of each component of the biogas system.
1.3 Demonstrate the safe storage and handling of tools, equipment and materials accessories for designing of biogas systems
1.4. Demonstrate the application different types of installation tools, equipment and materials for biogas systems

Outcome 2

Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of biogas system.

Evidence Requirements

2.1. Demonstrate the safe handling of power tools, equipment and materials during designing, installing and commissioning a biogas system

2.2. Demonstrate the safe handling of power tools, equipment and materials for testing the biogas system during designing, installing and commissioning

2.3. Demonstrate safe operations of power tools, equipment and materials during designing, installing and commissioning of biogas system components.

2.4. Demonstrate safe practises when processing and utilising materials for designing, installing and commissioning of biogas system.

Outcome 3
Demonstrate technical skills in designing, installing and commissioning of biogas system

Evidence requirements

3.1. Demonstrate technical knowledge and skills in designing various capacities and types of biogas systems
3.2. Demonstrate technical knowledge and skills in installing different types and capacities of biogas systems
3.3. Demonstrate technical knowledge and skills in commissioning of various types and capacities of newly installed biogas systems

Outcome 4
Demonstrate maintenance practices for power tools, equipment and materials used for biogas systems

Evidence requirements

4.1 Demonstrate procedures to identify and documenting faults in power tools, equipment and materials.

4.2 Demonstrate safe practices and procedures in maintaining power tools, equipment and materials

4.3 Demonstrate handling maintenance hand tools and testing equipment's practises in fixing the defects in Power tools, equipment's and materials

4.4 Prepare to manage maintenance work plan for power tools, equipment and materials

Planned Review Date	30th April 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April 2017	N/A

End of Document

Title	**Assist Tradesperson to determine energy efficiency and energy conservation practices to save energy**				
Code	**SE4302**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard is for people who work, or intend to work in Energy and Energy related fields. Persons credited with this unit standard are able to: • Prepare to evaluate energy efficiency and energy conservation practices to save energy • Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems • Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Classification	Core Skills

Critical health and safety prerequisites	All training and assessment activities must be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. The following skills and knowledge are required: • Knowledge of the basic geography of the Pacific region and local, including culture, norms and values • Knowledge of basic operation of energy utilizing systems in residential, commercial and industrial buildings • Understanding of drivers of energy efficiency and energy management • Knowledge of the importance of financial analysis of EE saving opportunities and EE policies and regulatory frameworks and their implications.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 **Definition**
Energy Utilizing Systems refer to all electrical appliances, equipment and buildings that utilize energy to produce an output. Outputs are useful work done by these system

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to evaluate energy efficiency and energy conservation practices to save energy

Evidence requirements
1.1. Plan and select opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system.
1.2. Plan to appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
1.3. Plan and select best practice and benchmarking methods to determine current energy efficiency, energy conservation and management performance

Outcome 2
Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence Requirements
2.1. Evaluate opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system, including building designs and orientation
2.2. Appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
2.3 Demonstrate evaluating best practice and benchmarking methods to determine current energy efficiency, energy conservation and management

performance

2.4. Review energy conservation, energy efficiency and optimisation, operation and management plans to identify areas needing improvement and action to be taken

Outcome 3

Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence requirements

3.1. Document energy appliances of the building/homes and their consumption.
3.2. Document recommended best practice to conserve energy in energy audits.
3.3. Document selected energy efficient fittings and services in design brief.

3.4 Document identified opportunities for innovation in energy efficiency and progress through established channels

Planned Review Date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

End of Document

Title	**Design, install, operate and maintain RET systems (Biogas System)**				
Code	**SE4303B**	**Level**	**4**	**Credits**	**8**

Purpose	This unit standard involves installation, operation and maintenance of biogas systems Persons credited with this unit standard are able to: • Prepare to install operate and maintain biogas systems • Demonstrate Installation of biogas systems equipment. • Demonstrate the safe handling, operations and maintenance of Biogas system. • Write completion report on installation and maintenance activities.

Classification	Core Skills

Critical health and safety prerequisites	All training and assessment activities must be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following skills and knowledge are required: • Knowledge of the basic hand tools and equipment • Knowledge of basic functions and components of biogas systems • Knowledge of basic civil and mechanical works involved biogas system • Knowledge of the environmental and social impacts of biogas system development

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.
- Sustainable Energy Development refer to the utilization of biogas system for economic development
- Civil Works refers to work that involves civil engineering construction of concrete base and digester and ducting for the biogas production
- Power tools refers to tools or machines used for civil, mechanical, electrical and electronic works in cutting, drilling,

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Prepare to install, operate and maintain biogas systems

Evidence requirements
1.1. Select OHS procedures for a given work area, obtained and understood.
1.2. Assess and select health and safety risks and established risk control measures and procedures in preparation for the work are followed.
1.3. Assess and select safety hazards that have not previously been identified are noted and established risk control measures are implemented.
1.4. Prepare installation/maintenance in consultation with other affected by the work and sequenced appropriately.
1.5. Determine the nature and location of the work from documentation or appropriate person to establish the scope of work to be undertaken.
1.6. Plan the location of apparatus and associated equipment within the constraints of the building structure, significant and regulations.
1.7. Seek advice from appropriate persons to ensure the work is coordinated effectively with others.
1.8. Assess and obtain material needed for the installation work in accordance with established procedures and checked against job requirements.
1.9. Assess and obtain tools, equipment and testing devices needed to for the installation work in accordance with established procedures and checked for correct operation and safety.
1.10. Appraise preparatory work to ensure no damage has occurred and complies with requirements.

Outcome 2
Demonstrate Installation of biogas system equipment.

Evidence requirements

2.1. Explain the various kinds of Biogas system configurations.

2.2. Explain the functions and limitations of each part and components of biogas systems and equipment
2.3. Demonstrate the assembly and dismantle of system components
2.4. Demonstrate carrying out apparatus installation efficiently without unnecessary waste of materials or damage to apparatus/components, circuits, the surrounding environment or services and using sustainable energy principles
2.5. Demonstrate carrying out ongoing checks of the quality of installed apparatus/components in accordance with established procedures.
2.6. Demonstrate isolation and checking of circuits/components where necessary in strict accordance OHS requirements and procedures.
2.7. Demonstrate the testing and commissioning procedures involved in the installation of biogas systems and equipment

Outcome 3
Demonstrate the safe handling, operations and maintenance of Biogas system

Evidence Requirements
3.1. Demonstrate the safety handling and operational procedures of biogas system
3.2. Demonstrate the safety procedures of operational system checks on biogas system
3.3 Install apparatus and associated equipment are installed and maintained to comply with technical standards and job specifications and requirements with sufficient access to affect
3.4. Demonstrate safety practises and procedures in maintaining biogas systems, components and materials
3.5. Demonstrate fault finding procedures and defects in biogas systems components and materials.
3.6. Demonstrate safety monitoring techniques on biogas systems and equipment’s
3.7. Demonstrate maintenance work plan for biogas system components and materials

Outcome 4
Write completion report on installation and maintenance activities.

Evidence requirements
4.1. Demonstrate adhering to OHS work completion risk control measures and procedures
4.2. Demonstrate cleaning work site and made safe in accordance with established procedures.
4.3. Perform final checks to the installed and maintained biogas systems so that they conform to requirements.
4.4. Document ‘As-installed’ emergency systems apparatus and associated equipment and an appropriate person or persons notified in accordance with established procedures.

4.5. Demonstrate the reporting and document practises of biogas system operations and analysis
4.6. Explain procedures of identify and documenting faults in biogas system.

Planned Review Date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

End of Document

Title	**Co-ordinate maintenance of renewable energy (RE) apparatus and systems** *The learning and assessment activities in this unit standard will applied in the elected field of Renewable Energy: Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4304**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to coordinate the maintenance of renewable energy apparatus and systems. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • Prepare to supervise and coordinate work maintenance in various work locations • Carry out maintenance in various work locations • Complete work

Classification	Core

Critical health and safety prerequisites	All training and assessment activities must be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant maintenance functions for RE systems • Knowledge of principles of maintenance • Knowledge of maintenance plans and systems • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving • Knowledge of OHS legislation, organisation policies, goals, objectives and plans that relate to work activities in the renewable energy sector.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- **Maintenance systems** include: preventative maintenance, predictive maintenance, corrective maintenance
- **Maintenance principles** include: maintenance function, role of maintenance department, OHS requirements
- **OHS/WHS** is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations
- **Work location** includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to supervise and coordinate work maintenance in various work locations

Evidence Requirements
1.1 OHS procedures for a given work area are obtained and understood
1.2 Established OHS risk control measures and procedures are followed in preparation for the work
1.3 Safety hazards which have not previously been identified are documented and risk control measures devised and implemented in consultation with appropriate personnel
1.4 The extent of work is determined from job specifications, drawings and regulatory requirements
1.5 Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved on the work site/work location
1.6 Skills needed to undertake work are determined from job specifications and /or consultation with appropriate personnel

1.7 Personnel and materials needed to undertake maintenance are obtained in accordance with established procedures and checked against job requirements
1.8 Tools, equipment and testing devices needed to undertake maintenance are obtained in accordance with established procedures and checked for correct operation and safety
1.9 Preparatory work is checked to ensure no damage has occurred and complies with requirements

Outcome 2
Carry out maintenance in various work locations

Evidence requirements
2.1 OHS risk control measures and procedures for carrying out the work are followed
2.2 Determine the need to test or measure live in strict accordance with the OHS requirements and when necessary conducted within established safety procedures
2.3 Circuits/machinery/plant are checked as being isolated where necessary in strict accordance with OHS requirements and procedure
2.4 Maintenance is carried out in compliance with technical standards and job specifications and requirements
2.5 Decisions for dealing with unexpected situations are made from discussions with appropriate persons and job specifications and requirements
2.6 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes
2.7 Ongoing checks of the quality of maintenance are undertaken in accordance with job specification, technical standards and/or regulatory requirements
2.8 Work efficiently without waste of materials and energy or damage to apparatus, circuits, the surrounding environment or other services.

Outcome 3
Complete work

Evidence Requirements
3.1 OHS risk control work completion measures and procedures are followed
3.2 Work site/location is made safe in accordance with established safety procedures
3.3 Verify maintenance confirm to requirements
3.4 Work completion is documented and appropriate person(s) notified in accordance with established procedures.

Planned review date	30th April 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April 2017	N/A

HYBRIDWIND

ELECTIVE

Title	**Supervise and coordinate energy sector work activities** *The learning and assessment activities in this unit standard will applied in the elected field of Sustainable Energy: Energy Management; Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4102**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to supervise and coordinate work activities in the energy sector. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • Prepare to supervise and coordinate work activities in various work locations • Supervise and coordinate work activities in various work locations • Document supervision and coordination activities

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant work functions in the energy sector • Knowledge of specifications and work instructions pertaining to the relevant work functions in the energy sector • Use of analytical techniques in problem solving • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving and dispute resolution • Effective instruction skills and knowledge of methods

	• Knowledge of OHS legislation, organisation policies, goals, objectives and plans that relate to work activities in the energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- Supervising and coordinating work activities shall be demonstrated in any of the following energy sector disciplines: Automation technologies, Computers, Data Communications, Electrical, Electrical Machines, Electronics, Fire protection, Instrumentation, Refrigeration and Air Conditioning, Renewable / sustainable energy, Security technology.

- Analytical techniques in problem solving include: Brainstorming; Fishbone diagrams/cause and effect diagrams; Logic trees; Process logic/process requirements; Similarity/difference analysis; SWOT analysis.

- OHS/WHS is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

- Work location includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 *Legislation*
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to supervise and coordinate work activities in various work locations

Evidence Requirements

1.1 WHS/OHS processes and procedures for a given work area are identified, obtained and understood.
1.2 Job specification and requirements are obtained and understood
1.3 Plant, materials and skills needed for the work are established from specifications, and relevant documentation
1.4 Plant, materials, personnel and others needed for the work are accessed in accordance with established procedure.

Outcome 2
Supervise and coordinate work activities in various work locations

Evidence requirements
2.1 OHS policies, procedures and programs are implemented and monitored
2.2 Guidance and work instructions are given to appropriate personnel to ensure the various aspects of the work are sequenced and completed in accordance with job specifications and requirements
2.3 Cooperation is sought from others involved in the work to ensure the various aspects of the work are coordinated effectively.
2.4 Work progress is monitored against schedules, job specifications and requirements.
2.5 Conflict issues at the work site are dealt with in accordance with acceptable cultural protocols and established procedures.
2.6 Requested variations to job specifications are dealt with in accordance with established procedures and processes.
2.7 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes.

Outcome 3
Document supervision and coordination activities
Evidence Requirements
3.1 Job records are maintained in accordance with established procedures
3.2 Processes are followed to ensure activities are carried out to established procedures

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

Planned review date	31st December 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	31st January 2017	N/A

Title	**Apply tools, equipment & materials in complex tasks in RE & EE for designing, installing and commissioning (Wind-based hybrid System)**				
Code	**SE4301HW**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard involves working with renewable energy systems tools, equipment and materials used for wind-based hybrid power systems Persons credited with this unit standard are able to: • Demonstrate the use of different types of power tools, equipment and materials used for designing, installing and commissioning of wind-based hybrid systems • Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of wind-based hybrid power system • Demonstrate technical skills in designing, installing and commissioning of wind-based hybrid system • Demonstrate maintenance practices for power tools, equipment and materials used for wind-based hybrid power systems

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. The following skills and knowledge are required: • Knowledge of the basic hand tools and equipment • Knowledge of basic operation of a wind-based hybrid system • Knowledge of basic civil works, electrical/electronic works and mechanical works involved in wind-based hybrid system • Understanding of wind-based hybrid power supply

	• Knowledge of the environmental and social impacts of wind-based hybrid development.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.
- Wind Energy Conversion Systems (WECS) refers to a revolving electrical/electronic procedure converting into range of 10 kilowats to 100 kilowatts in power generating capacity.
- Civil Works refers to work that involves civil engineering construction of concrete floor base for wind-based hybrid facility to be safely contained
- Mechanical Works refers to the design and erection of a mechanical propulsion system connected to electrical/electronic revolving mechanism that generates power.
- Commissioning refers to the analysing and testing of all parts of a WEC system for functionality and efficiency.

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Demonstrate the use of different types of power tools, equipment and materials used for designing, installing and commissioning of wind-based hybrid systems

Evidence requirements
1.3. Demonstrate the use of different types of planning and designing tools, equipment and materials for wind-based hybrid systems
1.4. Demonstrate uses and functions of each component of the wind-based hybrid system.
1.3 Demonstrate the safe storage and handling of tools, equipment and materials accessories for designing of wind-based hybrid systems

1.4. Demonstrate the application different types of installation tools, equipment and materials for wind-based hybrid systems

Outcome 2

Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of wind-based hybrid power system

Evidence Requirements

2.1. Demonstrate the safe handling of power tools, equipment and materials during designing, installing and commissioning a wind-based hybrid power system

2.2. Demonstrate the safe handling of power tools, equipment and materials for testing the wind-based hybrid system during designing, installing and commissioning

2.3. Demonstrate safe operations of power tools, equipment and materials during designing, installing and commissioning of wind-based hybrid system components.

2.4. Demonstrate safe practises when processing and utilising materials for designing, installing and commissioning of wind-based hybrid power system.

Outcome 3

Demonstrate technical skills in designing, installing and commissioning of wind-based hybrid system

Evidence requirements

3.1. Demonstrate technical knowledge and skills in designing various capacities and types of wind-base hybrid systems

3.2. Demonstrate technical knowledge and skills in installing different types and capacities of wind-based hybrid systems

3.3. Demonstrate technical knowledge and skills in commissioning of various types and capacities of newly installed wind-based hybrid systems

Outcome 4

Demonstrate maintenance practices for power tools, equipment and materials used for wind-based hybrid power systems

Evidence requirements

4.1 Demonstrate procedures to identify and documenting faults in power tools, equipment and materials.

4.2 Demonstrate safe practices and procedures in maintaining power tools, equipment and materials

4.3 Demonstrate handling maintenance hand tools and testing equipment's practises in fixing the defects in Power tools, equipment's and materials

4.4 Prepare to manage maintenance work plan for power tools, equipment and materials

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Assist Tradesperson to determine energy efficiency and energy conservation practices to save energy**				
Code	**SE4302**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard is for people who work, or intend to work in Energy and Energy related fields. Persons credited with this unit standard are able to: • Prepare to evaluate energy efficiency and energy conservation practices to save energy • Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems • Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of the basic geography of the Pacific region and local, including culture, norms and values • Knowledge of basic operation of energy utilizing systems in residential, commercial and industrial buildings • Understanding of drivers of energy efficiency and energy management • Knowledge of the importance of financial analysis of EE saving opportunities and EE policies and regulatory frameworks and their implications.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 **Definition**
Energy Utilizing Systems refer to all electrical appliances, equipment and buildings that utilize energy to produce an output. Outputs are useful work done by these system

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to evaluate energy efficiency and energy conservation practices to save energy

Evidence requirements

1.4. Plan and select opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system.
1.5. Plan to appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
1.6. Plan and select best practice and benchmarking methods to determine current energy efficiency, energy conservation and management performance

Outcome 2
Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence Requirements

2.1. Evaluate opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system, including building designs and orientation
2.2. Appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
2.3 Demonstrate evaluating best practice and benchmarking methods to determine current energy efficiency, energy conservation and management performance

2.4. Review energy conservation, energy efficiency and optimisation, operation and management plans to identify areas needing improvement and action to be taken

Outcome 3
Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence requirements
3.1. Document energy appliances of the building/homes and their consumption.

3.2. Document recommended best practice to conserve energy in energy audits.

3.3. Document selected energy efficient fittings and services in design brief.

3.4 Document identified opportunities for innovation in energy efficiency and progress through established channels

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Design, install, operate and maintain RET systems (Wind-based Hybrid System)**				
Code	**SE4303HW**	**Level**	**4**	**Credits**	**8**

Purpose	This unit standard involves installation, operation and maintenance of wind-based hybrid power systems Persons credited with this unit standard are able to: • Prepare to install, operate and maintain wind-based hybrid systems • Demonstrate Installation of wind-based hybrid system equipment. • Demonstrate the safe handling, operations and maintenance of wind-based hybrid system • Write completion report on installation and maintenance activities.

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. The following skills and knowledge are required: • Knowledge of the basic hand tools and equipment • Knowledge of basic functions and components of wind-based hybrid systems • Knowledge of basic civil works, electrical/electronic works and mechanical works involved wind-based hybrid systems • Understanding of wind-based hybrid power supply • Knowledge of the environmental and social impacts of wind-based hybrid system development

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.
- Sustainable Energy Development refer to the utilization of wind-based hybrid system for economic development
- Civil Works refers to work that involves civil engineering construction of concrete floor base for wind-based hybrid facility to be safely contained
- Mechanical Works refers to the design and erection of a mechanical propulsion system connected to electrical/electronic revolving mechanism that generates power.
- Power tools refers to tools or machines used for civil, mechanical, electrical and electronic works in cutting, drilling,

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Prepare to install, operate and maintain wind-based hybrid systems

Evidence requirements
1.11. Select OHS procedures for a given work area, obtained and understood.
1.12. Assess and select health and safety risks and established risk control measures and procedures in preparation for the work are followed.
1.13. Assess and select safety hazards that have not previously been identified are noted and established risk control measures are implemented.
1.14. Prepare installation/maintenance in consultation with other affected by the work and sequenced appropriately.
1.15. Determine the nature and location of the work from documentation or appropriate person to establish the scope of work to be undertaken.
1.16. Plan the location of apparatus and associated equipment within the constraints of the building structure, significant and regulations.
1.17. Seek advice from appropriate persons to ensure the work is coordinated effectively with others.

1.18. Assess and obtain material needed for the installation work in accordance with established procedures and checked against job requirements.
1.19. Assess and obtain tools, equipment and testing devices needed to for the installation work in accordance with established procedures and checked for correct operation and safety.
1.20. Appraise preparatory work to ensure no damage has occurred and complies with requirements.

Outcome 2
Demonstrate Installation of wind-based hybrid system equipment.

Evidence requirements

2.8. Explain the various kinds of wind-based hybrid system configurations.
2.9. Explain the functions and limitations of each part and components of wind-based hybrid systems and equipment
2.10. Demonstrate the assembly and dismantle of system components
2.11. Demonstrate carrying out apparatus installation efficiently without unnecessary waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles
2.12. Demonstrate carrying out ongoing checks of the quality of installed apparatus in accordance with established procedures.
2.13. Demonstrate isolation and checking of circuits/components where necessary in strict accordance OHS requirements and procedures.
2.14. Demonstrate the testing and commissioning procedures involved in the installation of wind-based hybrid systems and equipment

Outcome 3
Demonstrate the safe handling, operations and maintenance of wind-based hybrid system

Evidence Requirements
3.1. Demonstrate the safety handling and operational procedures of wind-based hybrid system
3.2. Demonstrate the safety procedures of operational system checks on wind-based hybrid system
3.3 Install apparatus and associated equipment are installed and maintained to comply with technical standards and job specifications and requirements with sufficient access to affect
3.4. Demonstrate safety practises and procedures in maintaining wind-based hybrid systems, components and materials
3.5. Demonstrate fault finding procedures and defects in wind-based hybrid systems components and materials.
3.6. Demonstrate safety monitoring techniques on wind-based hybrid systems and equipment's
3.7. Demonstrate maintenance work plan for wind-based hybrid system components and materials

Outcome 4
Write completion report on installation and maintenance activities.

Evidence requirements
4.7. Demonstrate adhering to OHS work completion risk control measures and procedures
4.8. Demonstrate cleaning work site and made safe in accordance with established procedures.
4.9. Perform final checks to the installed and maintained wind-based hybrid systems so that they conform to requirements.
4.10. Document ‘As-installed’ emergency systems apparatus and associated equipment and an appropriate person or persons notified in accordance with established procedures.
4.11. Demonstrate the reporting and document practises of wind-based hybrid system operations and analysis
4.12. Explain procedures of identify and documenting faults in wind-based hybrid system.

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

Title	**Co-ordinate maintenance of renewable energy (RE) apparatus and systems** *The learning and assessment activities in this unit standard will applied in the elected field of Renewable Energy: Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4304**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to coordinate the maintenance of renewable energy apparatus and systems. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • Prepare to supervise and coordinate work maintenance in various work locations • Carry out maintenance in various work locations • Complete work

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant maintenance functions for RE systems • Knowledge of principles of maintenance • Knowledge of maintenance plans and systems • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving • Knowledge of OHS legislation, organization policies, goals, objectives and plans that relate to work activities in the renewable energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- **Maintenance systems** include: preventative maintenance, predictive maintenance, corrective maintenance
- **Maintenance principles** include: maintenance function, role of maintenance department, OHS requirements
- **OHS/WHS** is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations
- **Work location** includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 Legislation

All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1

Prepare to supervise and coordinate work maintenance in various work locations

Evidence Requirements

1.10 OHS procedures for a given work area are obtained and understood

1.11 Established OHS risk control measures and procedures are followed in preparation for the work

1.12 Safety hazards which have not previously been identified are documented and risk control measures devised and implemented in consultation with appropriate personnel

1.13 The extent of work is determined from job specifications, drawings and regulatory requirements

1.14 Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved on the work site/work location

1.15 Skills needed to undertake work are determined from job specifications and /or consultation with appropriate personnel

1.16 Personnel and materials needed to undertake maintenance are obtained in accordance with established procedures and checked against job requirements
1.17 Tools, equipment and testing devices needed to undertake maintenance are obtained in accordance with established procedures and checked for correct operation and safety
1.18 Preparatory work is checked to ensure no damage has occurred and complies with requirements

Outcome 2
Carry out maintenance in various work locations

Evidence requirements
2.1 OHS risk control measures and procedures for carrying out the work are followed
2.2 Determine the need to test or measure live in strict accordance with the OHS requirements and when necessary conducted within established safety procedures
2.3 Circuits/machinery/plant are checked as being isolated where necessary in strict accordance with OHS requirements and procedure
2.4 Maintenance is carried out in compliance with technical standards and job specifications and requirements
2.5 Decisions for dealing with unexpected situations are made from discussions with appropriate persons and job specifications and requirements
2.6 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes
2.7 Ongoing checks of the quality of maintenance are undertaken in accordance with job specification, technical standards and/or regulatory requirements
2.8 Work efficiently without waste of materials and energy or damage to apparatus, circuits, the surrounding environment or other services.

Outcome 3
Complete work

Evidence Requirements
3.1 OHS risk control work completion measures and procedures are followed
3.2 Work site/location is made safe in accordance with established safety procedures
3.3 Verify maintenance confirm to requirements
3.4 Work completion is documented and appropriate person(s) notified in accordance with established procedures.

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

MICROHYDROPOWER

ELECTIVE

Title	**Supervise and coordinate energy sector work activities** *The learning and assessment activities in this unit standard will applied in the elected field of Sustainable Energy: Energy Management; Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4102**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to supervise and coordinate work activities in the energy sector. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • *Prepare to supervise and coordinate work activities in various work locations* • *Supervise and coordinate work activities in various work locations* • *Document supervision and coordination activities*

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant work functions in the energy sector • Knowledge of specifications and work instructions pertaining to the relevant work functions in the energy sector • Use of analytical techniques in problem solving • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving and dispute resolution • Effective instruction skills and knowledge of methods

	• Knowledge of OHS legislation, organisation policies, goals, objectives and plans that relate to work activities in the energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- Supervising and coordinating work activities shall be demonstrated in any of the following energy sector disciplines: Automation technologies, Computers, Data Communications, Electrical, Electrical Machines, Electronics, Fire protection, Instrumentation, Refrigeration and Air Conditioning, Renewable / sustainable energy, Security technology.

- Analytical techniques in problem solving include: Brainstorming; Fishbone diagrams/cause and effect diagrams; Logic trees; Process logic/process requirements; Similarity/difference analysis; SWOT analysis.

- OHS/WHS is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

- Work location includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 *Legislation*

All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1

Prepare to supervise and coordinate work activities in various work locations

Evidence Requirements

1.1 WHS/OHS processes and procedures for a given work area are identified, obtained and understood.
1.2 Job specification and requirements are obtained and understood
1.3 Plant, materials and skills needed for the work are established from specifications, and relevant documentation
1.4 Plant, materials, personnel and others needed for the work are accessed in accordance with established procedure.

Outcome 2
Supervise and coordinate work activities in various work locations

Evidence requirements
2.1 OHS policies, procedures and programs are implemented and monitored
2.2 Guidance and work instructions are given to appropriate personnel to ensure the various aspects of the work are sequenced and completed in accordance with job specifications and requirements
2.3 Cooperation is sought from others involved in the work to ensure the various aspects of the work are coordinated effectively.
2.4 Work progress is monitored against schedules, job specifications and requirements.
2.5 Conflict issues at the work site are dealt with in accordance with acceptable cultural protocols and established procedures.
2.6 Requested variations to job specifications are dealt with in accordance with established procedures and processes.
2.7 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes.

Outcome 3
Document supervision and coordination activities
Evidence Requirements
3.1 Job records are maintained in accordance with established procedures
3.2 Processes are followed to ensure activities are carried out to established procedures

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Planned review date	31st December 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	31st January 2017	N/A

Title	**Apply tools, equipment & materials in complex tasks in RE & EE for designing, installing and commissioning (Micro-hydropower System)**				
Code	**SE4301MHP**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard involves working with renewable energy systems tools, equipment and materials used for micro-hydropower systems Persons credited with this unit standard are able to: • Demonstrate the use of different types of power tools, equipment and materials used for designing, installing and commissioning of micro-hydropower systems • Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of micro-hydropower system • Demonstrate technical skills in designing, installing and commissioning of micro-hydropower system • Demonstrate maintenance practices for power tools, equipment and materials used for micro-hydropower systems

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. The following skills and knowledge are required: • Knowledge of the basic hand tools and equipment • Knowledge of basic operation of a micro-hydropower system • Knowledge of basic civil works, electrical/electronic works and mechanical works involved in micro-hydropower system • Understanding of micro-hydropower supply • Knowledge of the environmental and social impacts of micro-hydropower development

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.

- Micro-hydropower is a type of hydroelectric power that typically produces from 5 kW to 100 kW of electricity using the natural flow of water that turns the turbine that will in turn rotates the generator to produce electrical power. These installations can provide power to an isolated home or small community.
- Civil Works refers to work that involves civil engineering construction of concrete dam or weir to have water build up its potential energy and have it channelled through a penstock to the turbine. The penstock will also need civil works to support it. Such civil works involves, digging and mounting of footages to hold or support the penstock.
- Mechanical Works refers to the design and installation of mechanical components like the turbine itself connected to electrical/electronic control systems.
- Commissioning refers to the analysing and testing of all parts of a micro-hydropower system for functionality and efficiency.

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Demonstrate the use of different types of power tools, equipment and materials used for designing, installing and commissioning of micro-hydropower systems

Evidence requirements

1.5. Demonstrate the use of different types of planning and designing tools, equipment and materials for micro-hydropower systems

1.6. Demonstrate uses and functions of each component of the micro-hydropower system.

1.3 Demonstrate the safe storage and handling of tools, equipment and materials accessories for designing of micro-hydropower systems

1.4. Demonstrate the application different types of installation tools, equipment and materials for micro-hydropower systems

Outcome 2
Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of micro-hydropower system

Evidence Requirements
2.1. Demonstrate the safe handling of power tools, equipment and materials during designing, installing and commissioning a micro-hydropower system
2.2. Demonstrate the safe handling of power tools, equipment and materials for testing the micro-hydropower system during designing, installing and commissioning
2.3. Demonstrate safe operations of power tools, equipment and materials during designing, installing and commissioning of micro-hydropower system components.
2.4. Demonstrate safe practises when processing and utilising materials for designing, installing and commissioning of micro-hydropower power system.

Outcome 3
Demonstrate technical skills in designing, installing and commissioning of micro-hydropower system

Evidence requirements
3.1. Demonstrate technical knowledge and skills in designing various capacities and types of micro-hydropower systems
3.2. Demonstrate technical knowledge and skills in installing different types and capacities of micro-hydropower systems
3.3. Demonstrate technical knowledge and skills in commissioning of various types and capacities of newly installed micro-hydropower systems

Outcome 4
Demonstrate maintenance practices for power tools, equipment and materials used for micro-hydropower systems

Evidence requirements
4.1 Demonstrate procedures to identify and documenting faults in power tools, equipment and materials.
4.2 Demonstrate safe practices and procedures in maintaining power tools, equipment and materials
4.3 Demonstrate handling maintenance hand tools and testing equipment’s practises in fixing the defects in Power tools, equipment’s and materials
4.4 Prepare to manage maintenance work plan for power tools, equipment and materials

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Assist Tradesperson to determine energy efficiency and energy conservation practices to save energy**				
Code	**SE4302**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard is for people who work, or intend to work in Energy and Energy related fields. Persons credited with this unit standard are able to: • Prepare to evaluate energy efficiency and energy conservation practices to save energy • Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems • Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of the basic geography of the Pacific region and local, including culture, norms and values • Knowledge of basic operation of energy utilizing systems in residential, commercial and industrial buildings • Understanding of drivers of energy efficiency and energy management • Knowledge of the importance of financial analysis of EE saving opportunities and EE policies and regulatory frameworks and their implications.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 **Definition**
Energy Utilizing Systems refer to all electrical appliances, equipment and buildings that utilize energy to produce an output. Outputs are useful work done by these system

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to evaluate energy efficiency and energy conservation practices to save energy

Evidence requirements
1.7. Plan and select opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system.
1.8. Plan to appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
1.9. Plan and select best practice and benchmarking methods to determine current energy efficiency, energy conservation and management performance

Outcome 2
Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence Requirements
2.1. Evaluate opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system, including building designs and orientation
2.2. Appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
2.3 Demonstrate evaluating best practice and benchmarking methods to determine current energy efficiency, energy conservation and management performance

2.4. Review energy conservation, energy efficiency and optimisation, operation and management plans to identify areas needing improvement and action to be taken

Outcome 3
Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence requirements
3.1. Document energy appliances of the building/homes and their consumption.

3.2. Document recommended best practice to conserve energy in energy audits.

3.3. Document selected energy efficient fittings and services in design brief.

3.4 Document identified opportunities for innovation in energy efficiency and progress through established channels

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Design, install, operate and maintain RET systems (Micro-Hydropower System)**				
Code	**SE4303MHP**	**Level**	**4**	**Credits**	**8**

Purpose	This unit standard involves installation, operation and maintenance of micro-hydropower (MHP) systems Persons credited with this unit standard are able to: • Prepare to install, operate and maintain micro-hydropower (MHP) systems • Demonstrate Installation of micro-hydropower (MHP)system equipment • Demonstrate the safe handling, operations and maintenance of micro-hydropower (MHP) system • Write completion report on installation and maintenance activities.

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. The following skills and knowledge are required: • Knowledge of the basic hand tools and equipment • Knowledge of basic functions and components of micro-hydropower (MHP) systems • Knowledge of basic civil works, electrical/electronic works and mechanical works involved micro-hydropower (MHP) • Understanding of micro-hydropower (MHP) supply • Knowledge of the environmental and social impacts of micro-hydropower (MHP) system developmentKnowledge of OHS legislation, organisation policies, goals, objectives and plans that relate to work activities in the energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.

- Sustainable Energy Development refer to the utilization of micro-hydropower (MHP) system for economic development
- Civil Works refers to work that involves civil engineering construction of concrete dam or weir to have water build up its potential energy and have it channelled through a penstock to the turbine. The penstock will also need civil works to support it. Such civil works involves, digging and mounting of footages to hold or support the penstock.
- Mechanical Works refers to the design and installation of mechanical components like the turbine itself connected to electrical/electronic control systems.
- Power tools refers to tools or machines used for civil, mechanical, electrical and electronic works in cutting, drilling,

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Prepare to install, operate and maintain micro-hydropower (MHP) systems

Evidence requirements
1.21. Select OHS procedures for a given work area, obtained and understood.
1.22. Assess and select health and safety risks and established risk control measures and procedures in preparation for the work are followed.
1.23. Assess and select safety hazards that have not previously been identified are noted and established risk control measures are implemented.
1.24. Prepare installation/maintenance in consultation with other affected by the work and sequenced appropriately.
1.25. Determine the nature and location of the work from documentation or appropriate person to establish the scope of work to be undertaken.
1.26. Plan the location of apparatus and associated equipment within the constraints of the building structure, significant and regulations.

1.27. Seek advice from appropriate persons to ensure the work is coordinated effectively with others.
1.28. Assess and obtain material needed for the installation work in accordance with established procedures and checked against job requirements.
1.29. Assess and obtain tools, equipment and testing devices needed to for the installation work in accordance with established procedures and checked for correct operation and safety.
1.30. Check preparatory work to ensure no damage has occurred and complies with requirements.

Outcome 2
Demonstrate Installation of micro-hydropower (MHP)system equipment.

Evidence requirements

2.15. Explain the various kinds of micro-hydropower (MHP) system configurations.
2.16. Explain the functions and limitations of each part and components of micro-hydropower (MHP) systems and equipment
2.17. Demonstrate the assembly and dismantle of system components
2.18. Demonstrate carrying out apparatus installation efficiently without unnecessary waste of materials or damage to apparatus/components, circuits, the surrounding environment or services and using sustainable energy principles
2.19. Demonstrate carrying out ongoing checks of the quality of installed apparatus/components in accordance with established procedures.
2.20. Demonstrate isolation and checking of circuits/components where necessary in strict accordance OHS requirements and procedures.
2.21. Demonstrate the testing and commissioning procedures involved in the installation of micro-hydropower (MHP) systems and equipment

Outcome 3
Demonstrate the safe handling, operations and maintenance of micro-hydropower (MHP) system

Evidence Requirements
3.1. Demonstrate the safety handling and operational procedures of micro-hydropower (MHP) system
3.2. Demonstrate the safety procedures of operational system checks on micro-hydropower (MHP) system
3.3 Install apparatus and associated equipment are installed and maintained to comply with technical standards and job specifications and requirements with sufficient access to affect
3.4. Demonstrate safety practises and procedures in maintaining micro-hydropower (MHP) systems, components and materials
3.5. Demonstrate fault finding procedures and defects in micro-hydropower (MHP) systems components and materials.
3.6. Demonstrate safety monitoring techniques on micro-hydropower (MHP) systems and equipment’s

3.7. Demonstrate maintenance work plan for micro-hydropower (MHP) system components and materials

Outcome 4
Write completion report on installation and maintenance activities.

Evidence requirements
4.13. Demonstrate adhering to OHS work completion risk control measures and procedures
4.14. Demonstrate cleaning work site and made safe in accordance with established procedures.
4.15. Perform final checks to the installed and maintained micro-hydropower (MHP) systems so that they conform to requirements.
4.16. Document 'As-installed' emergency systems apparatus and associated equipment and an appropriate person or persons notified in accordance with established procedures.
4.17. Demonstrate the reporting and document practises of micro-hydropower (MHP) system operations and analysis
4.18. Explain procedures of identify and documenting faults in micro-hydropower (MHP) system.

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Co-ordinate maintenance of renewable energy (RE) apparatus and systems** *The learning and assessment activities in this unit standard will applied in the elected field of Renewable Energy: Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4304**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to coordinate the maintenance of renewable energy apparatus and systems. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • *Prepare to supervise and coordinate work maintenance in various work locations* • *Carry out maintenance in various work locations* • *Complete work*

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant maintenance functions for RE systems • Knowledge of principles of maintenance • Knowledge of maintenance plans and systems • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving • Knowledge of OHS legislation, organization policies, goals, objectives and plans that relate to work activities in the renewable energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- **Maintenance systems** include: preventative maintenance, predictive maintenance, corrective maintenance
- **Maintenance principles** include: maintenance function, role of maintenance department, OHS requirements
- **OHS/WHS** is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations
- **Work location** includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 Legislation

All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1

Prepare to supervise and coordinate work maintenance in various work locations

Evidence Requirements

1.19 OHS procedures for a given work area are obtained and understood
1.20 Established OHS risk control measures and procedures are followed in preparation for the work
1.21 Safety hazards which have not previously been identified are documented and risk control measures devised and implemented in consultation with appropriate personnel
1.22 The extent of work is determined from job specifications, drawings and regulatory requirements
1.23 Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved on the work site/work location
1.24 Skills needed to undertake work are determined from job specifications and /or consultation with appropriate personnel

1.25 Personnel and materials needed to undertake maintenance are obtained in accordance with established procedures and checked against job requirements
1.26 Tools, equipment and testing devices needed to undertake maintenance are obtained in accordance with established procedures and checked for correct operation and safety
1.27 Preparatory work is checked to ensure no damage has occurred and complies with requirements

Outcome 2
Carry out maintenance in various work locations

Evidence requirements
2.1 OHS risk control measures and procedures for carrying out the work are followed
2.2 Determine the need to test or measure live in strict accordance with the OHS requirements and when necessary conducted within established safety procedures
2.3 Circuits/machinery/plant are checked as being isolated where necessary in strict accordance with OHS requirements and procedure
2.4 Maintenance is carried out in compliance with technical standards and job specifications and requirements
2.5 Decisions for dealing with unexpected situations are made from discussions with appropriate persons and job specifications and requirements
2.6 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes
2.7 Ongoing checks of the quality of maintenance are undertaken in accordance with job specification, technical standards and/or regulatory requirements
2.8 Work efficiently without waste of materials and energy or damage to apparatus, circuits, the surrounding environment or other services.

Outcome 3
Complete work

Evidence Requirements
3.1 OHS risk control work completion measures and procedures are followed
3.2 Work site/location is made safe in accordance with established safety procedures
3.3 Verify maintenance confirm to requirements
3.4 Work completion is documented and appropriate person(s) notified in accordance with established procedures.

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

SOLAR

ELECTIVE

Title	**Supervise and coordinate energy sector work activities** *The learning and assessment activities in this unit standard will applied in the elected field of Sustainable Energy: Energy Management; Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4102**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to supervise and coordinate work activities in the energy sector. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • *Prepare to supervise and coordinate work activities in various work locations* • *Supervise and coordinate work activities in various work locations* • *Document supervision and coordination activities*

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant work functions in the energy sector • Knowledge of specifications and work instructions pertaining to the relevant work functions in the energy sector • Use of analytical techniques in problem solving • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving and dispute resolution • Effective instruction skills and knowledge of methods

	• Knowledge of OHS legislation, organisation policies, goals, objectives and plans that relate to work activities in the energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- Supervising and coordinating work activities shall be demonstrated in any of the following energy sector disciplines: Automation technologies, Computers, Data Communications, Electrical, Electrical Machines, Electronics, Fire protection, Instrumentation, Refrigeration and Air Conditioning, Renewable / sustainable energy, Security technology.

- Analytical techniques in problem solving include: Brainstorming; Fishbone diagrams/cause and effect diagrams; Logic trees; Process logic/process requirements; Similarity/difference analysis; SWOT analysis.

- OHS/WHS is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations

- Work location includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 *Legislation*
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to supervise and coordinate work activities in various work locations

Evidence Requirements

1.1 WHS/OHS processes and procedures for a given work area are identified, obtained and understood.
1.2 Job specification and requirements are obtained and understood
1.3 Plant, materials and skills needed for the work are established from specifications, and relevant documentation
1.4 Plant, materials, personnel and others needed for the work are accessed in accordance with established procedure.

Outcome 2
Supervise and coordinate work activities in various work locations

Evidence requirements
2.1 OHS policies, procedures and programs are implemented and monitored
2.2 Guidance and work instructions are given to appropriate personnel to ensure the various aspects of the work are sequenced and completed in accordance with job specifications and requirements
2.3 Cooperation is sought from others involved in the work to ensure the various aspects of the work are coordinated effectively.
2.4 Work progress is monitored against schedules, job specifications and requirements.
2.5 Conflict issues at the work site are dealt with in accordance with acceptable cultural protocols and established procedures.
2.6 Requested variations to job specifications are dealt with in accordance with established procedures and processes.
2.7 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes.

Outcome 3
Document supervision and coordination activities
Evidence Requirements
3.1 Job records are maintained in accordance with established procedures
3.2 Processes are followed to ensure activities are carried out to established procedures

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

Title	**Apply tools, equipment & materials for designing, installing and commissioning RE systems (Solar Photovoltaic System)**				
Code	**SE4301S**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard involves working with renewable energy systems tools, equipment and materials used solar photovoltaic (PV) systems Persons credited with this unit standard are able to: • Prepare to install, operate and maintain solar PV systems • Demonstrate the use of tools, equipment and materials used for designing, installing and commissioning of solar PV systems • Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of solar PV system • Demonstrate technical knowledge and skills in designing, installing and commissioning of solar PV system • Demonstrate the maintenance practises of solar PV systems, equipment, materials and tools used for designing, installing and commissioning of RE systems

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. The following skills and knowledge are required: • Knowledge of the basic hand tools and equipment • Knowledge of basic operation of a solar PV system • Knowledge of basic civil works, electrical/electronic works and any mechanical works involved in solar PV systems • Understanding of solar PV supply • Knowledge of the environmental and social impacts of solar PV systems development

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.

- Civil Works refers to work that involves civil engineering construction of concrete floor base and solar PV facility safely contain,
- A solar photovoltaic system, also known as a PV system, is a power system that uses solar cells embedded into a solar panel and converts solar radiation (light) into electrical power. A typical solar cell can produce a maximum of 0.5 volts.
- Civil Works refers to work that involves civil engineering construction of concrete floor base for solar PV facility such as a solar farm, to be safely contained
- Mechanical Works refers to the design and erection of a mechanical structure such as the supporting frames and/or poles to support and hold the array of solar PV panels.
- Commissioning refers to the analysing and testing of all parts of a solar PV system for functionality and efficiency.

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Prepare to install, operate and maintain solar PV systems
Evidence requirements
1.31. Select OHS procedures for a given work area;
1.32. Assess health and safety risks and established risk control measures and procedures in preparation for the work.
1.33. Assess safety hazards that have not previously been identified and ensure established risk control measures are implemented.
1.34. Prepare installation/maintenance in consultation with others affected by the work and ensure work is sequenced appropriately.
1.35. Determine the nature and location of the work from documentation or appropriate persons to establish the scope of work to be undertaken.

1.36. Plan the location of apparatus and associated equipment within the constraints of the building structure, significant and regulations.
1.37. Seek advice from appropriate persons to ensure the work is coordinated effectively with others.
1.38. Assess and obtain materials needed for the installation work in accordance with established procedures and checked against job requirements.
1.39. Assess and obtain tools, equipment and testing devices needed to for the installation work in accordance with established procedures and checked for correct operation and safety.
1.40. Appraise preparatory work to ensure no damage has occurred and complies with requirements.

Outcome 2
Demonstrate the use of tools, equipment and materials used for designing, installing and commissioning of solar PV systems

Evidence requirements
2.1. Demonstrate the use of different types of planning and designing tools, equipment and materials for solar PV systems
2.2. Demonstrate uses and functions of each component of the solar PV system.
2.3. Demonstrate the safe storage and handling of tools, equipment and materials accessories for designing of solar PV systems
2.4. Demonstrate the application different types of installation tools, equipment and materials for solar PV systems

Outcome 3
Demonstrate the safe handling of power tools, equipment and materials for designing, installing and commissioning of solar PV system
Evidence Requirements
3.1. Demonstrate the safe handling of tools, equipment and materials during designing, installing and commissioning a solar PV system
3.2. Demonstrate the safe handling of tools, equipment and materials for testing the solar PV system during designing, installing and commissioning
3.3. Demonstrate safe operations of tools, equipment and materials during designing, installing and commissioning of solar PV system components.
3.4. Demonstrate safe practises when processing and utilising materials for designing, installing and commissioning of solar PV power system.

Outcome 4
Demonstrate technical knowledge and skills in designing, installing and commissioning of solar PV system
Evidence requirements
4.1. Demonstrate technical knowledge and skills in designing various capacities and types of solar PV systems
4.2. Demonstrate technical knowledge and skills in installing different types and capacities of solar PV systems
4.3. Demonstrate technical knowledge and skills in commissioning of various types and capacities of newly installed solar PV systems

Outcome 5
Demonstrate the maintenance practises of solar PV systems, equipment, materials and tools used for designing, installing and commissioning of RE systems
Evidence requirements
5.1 Demonstrate procedures to identify and documenting faults in solar PV systems, power tools, equipment and materials
5.2 Demonstrate safe practices and procedures in maintaining in solar PV systems, tools, equipment and materials
5.3 Prepare to manage maintenance work plan for solar PV systems, tools, equipment and materials
5.4. Perform final checks to the installed and maintained solar PV systems so that they conform to requirements.

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	30th April, 2017	N/A

Title	**Assist Tradesperson to determine energy efficiency and energy conservation practices to save energy**				
Code	**SE4302**	**Level**	**4**	**Credits**	**6**

Purpose	This unit standard is for people who work, or intend to work in Energy and Energy related fields. Persons credited with this unit standard are able to: • Prepare to evaluate energy efficiency and energy conservation practices to save energy • Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems • Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of the basic geography of the Pacific region and local, including culture, norms and values • Knowledge of basic operation of energy utilizing systems in residential, commercial and industrial buildings • Understanding of drivers of energy efficiency and energy management • Knowledge of the importance of financial analysis of EE saving opportunities and EE policies and regulatory frameworks and their implications.

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 **Definition**
Energy Utilizing Systems refer to all electrical appliances, equipment and buildings that utilize energy to produce an output. Outputs are useful work done by these system

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1
Prepare to evaluate energy efficiency and energy conservation practices to save energy

Evidence requirements
1.10. Plan and select opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system.
1.11. Plan to appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
1.12. Plan and select best practice and benchmarking methods to determine current energy efficiency, energy conservation and management performance

Outcome 2
Evaluate energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence Requirements
2.1. Evaluate opportunities for energy efficiency and energy conservation measures for savings on energy utilizing system, including building designs and orientation
2.2. Appraise and evaluate organisational policy and operational guidelines for energy efficiency and energy conservation activity
2.3 Demonstrate evaluating best practice and benchmarking methods to determine current energy efficiency, energy conservation and management performance

2.4. Review energy conservation, energy efficiency and optimisation, operation and management plans to identify areas needing improvement and action to be taken

Outcome 3
Document the evaluation of energy efficiency and energy conservation practices to save energy in energy utilizing systems

Evidence requirements
3.1. Document energy appliances of the building/homes and their consumption.

3.2. Document recommended best practice to conserve energy in energy audits.

3.3. Document selected energy efficient fittings and services in design brief.

3.4 Document identified opportunities for innovation in energy efficiency and progress through established channels

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Design, install, operate and maintain RET systems (Solar Photovoltaic System)**				
Code	**SE4303S**	**Level**	**4**	**Credits**	**8**

Purpose	This unit standard involves installation, operation and maintenance of solar PV systems Persons credited with this unit standard are able to: • Prepare to install, operate and maintain solar PV systems • Demonstrate Installation of solar PV system equipment. • Demonstrate the safe handling, operations and maintenance of solar PV system • Write completion report on installation and maintenance activities.

Classification	Core Skills

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following skills and knowledge are required: • Knowledge of the basic hand tools and equipment • Knowledge of basic functions and components of solar PV systems • Knowledge of basic civil works, electrical/electronic works and mechanical works involved solar PV • Understanding of solar PV power supply • Knowledge of the environmental and social impacts of solar PV system development

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 Definition.
- Sustainable Energy Development refer to the utilization of solar PV for economic development
- Civil Works refers to work that involves civil engineering construction of concrete floor base and solar PV facility safely contain
- Power tools refers to tools or machines used for civil, mechanical, electrical and electronic works in cutting, drilling,

2 Legislation
All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and Evidence Requirements

Outcome 1
Prepare to install, operate and maintain solar PV systems

Evidence requirements
1.41. Select OHS procedures for a given work area, obtained and understood.
1.42. Assess and select health and safety risks and established risk control measures and procedures in preparation for the work are followed.
1.43. Assess and select safety hazards that have not previously been identified are noted and established risk control measures are implemented.
1.44. Prepare installation/maintenance in consultation with other affected by the work and sequenced appropriately.
1.45. Determine the nature and location of the work from documentation or appropriate person to establish the scope of work to be undertaken.
1.46. Plan the location of apparatus and associated equipment within the constraints of the building structure, significant and regulations.
1.47. Seek advice from appropriate persons to ensure the work is coordinated effectively with others.
1.48. Assess and obtain material needed for the installation work in accordance with established procedures and checked against job requirements.
1.49. Assess and obtain tools, equipment and testing devices needed to for the installation work in accordance with established procedures and checked for correct operation and safety.
1.50. Appraise preparatory work to ensure no damage has occurred and complies with requirements.

Outcome 2
Demonstrate Installation of solar PV system equipment.

Evidence requirements

2.22. Explain the various kinds of solar PV system configurations.

2.23. Explain the functions and limitations of each part and components of solar PV systems and equipment
2.24. Demonstrate the assembly and dismantle of system components
2.25. Demonstrate carrying out apparatus installation efficiently without unnecessary waste of materials or damage to apparatus, circuits, the surrounding environment or services and using sustainable energy principles
2.26. Demonstrate carrying out ongoing checks of the quality of installed apparatus in accordance with established procedures.
2.27. Demonstrate isolation and checking of circuits/components where necessary in strict accordance OHS requirements and procedures.
2.28. Demonstrate the testing and commissioning procedures involved in the installation of solar PV systems and equipment

Outcome 3
Demonstrate the safe handling, operations and maintenance of solar PV system

Evidence Requirements
3.1. Demonstrate the safety handling and operational procedures of solar PV system
3.2. Demonstrate the safety procedures of operational system checks on solar PV system
3.3 Install apparatus and associated equipment are installed and maintained to comply with technical standards and job specifications and requirements with sufficient access to affect
3.4. Demonstrate safety practises and procedures in maintaining solar PV systems, components and materials
3.5. Demonstrate fault finding procedures and defects in solar PV systems components and materials.
3.6. Demonstrate safety monitoring techniques on solar PV systems and equipment’s
3.7. Demonstrate maintenance work plan for solar PV system components and materials

Outcome 4
Write completion report on installation and maintenance activities.

Evidence requirements
4.19. Demonstrate adhering to OHS work completion risk control measures and procedures
4.20. Demonstrate cleaning work site and made safe in accordance with established procedures.
4.21. Perform final checks to the installed and maintained solar PV systems so that they conform to requirements.
4.22. Document ‘As-installed’ emergency systems apparatus and associated equipment and an appropriate person or persons notified in accordance with established procedures.
4.23. Demonstrate the reporting and document practises of solar PV system operations and analysis

4.24. Explain procedures of identify and documenting faults in solar PV system.

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

Process	**Version**	**Date**	**Last Date for Assessment**
Registration	1	30th April, 2017	N/A

Title	**Co-ordinate maintenance of renewable energy (RE) apparatus and systems** *The learning and assessment activities in this unit standard will applied in the elected field of Renewable Energy: Micro-hydro; Solar, Biomass, Hybrid wind systems*				
Code	**SE4304**	**Level**	**4**	**Credits**	**5**

Purpose	This unit describes the skills and knowledge required to coordinate the maintenance of renewable energy apparatus and systems. This unit standard is appropriate for people who are experienced and currently working in the energy sector. Persons credited with this standard are able to: • Prepare to supervise and coordinate work maintenance in various work locations • Carry out maintenance in various work locations • Complete work

Classification	Core

Critical health and safety prerequisites	All activities shall be in accordance with health and safety legislation and related regulations.

Recommended skills and knowledge	The following knowledge underpins this assessment standard. It is anticipated an accredited provider will develop and deliver the required curriculum. • Knowledge of Standard Operating Procedures pertaining to relevant maintenance functions for RE systems • Knowledge of principles of maintenance • Knowledge of maintenance plans and systems • Interpersonal and communication skills that enhance cooperation in the workplace • Skills in problem solving • Knowledge of OHS legislation, organization policies, goals, objectives and plans that relate to work activities in the renewable energy sector

Quality assurance requirements	This unit standard shall only be assessed and recommended for award by workplace assessors registered with the FQC. Assessors shall comply with the national assessment and moderation requirements as set down by the FQC. Details of specific registration and accreditation requirements and the national assessment arrangements are available from the FQC on www.fhec.org.fj .

Explanatory notes

1 *Definitions*

- **Maintenance systems** include: preventative maintenance, predictive maintenance, corrective maintenance
- **Maintenance principles** include: maintenance function, role of maintenance department, OHS requirements
- **OHS/WHS** is concerned with protecting the *safety*, *health* and welfare of people engaged in work practices in various working situations
- **Work location** includes any place where work activities are conducted inside or outside a physical building. This includes a location in a rural or remote area, water-based location above or below the water surface, caves, and travel to reach a work site.

2 Legislation

All activities associated with this unit standard must comply with the requirements of national codes of practice, regulations and legislation for workplace health, safety, and environmental protection and any subsequent amendments.

Outcomes and evidence requirements

Outcome 1

Prepare to supervise and coordinate work maintenance in various work locations

Evidence Requirements

1.28 OHS procedures for a given work area are obtained and understood

1.29 Established OHS risk control measures and procedures are followed in preparation for the work

1.30 Safety hazards which have not previously been identified are documented and risk control measures devised and implemented in consultation with appropriate personnel

1.31 The extent of work is determined from job specifications, drawings and regulatory requirements

1.32 Appropriate personnel are consulted to ensure the work is coordinated effectively with others involved on the work site/work location

1.33 Skills needed to undertake work are determined from job specifications and /or consultation with appropriate personnel

1.34 Personnel and materials needed to undertake maintenance are obtained in accordance with established procedures and checked against job requirements
1.35 Tools, equipment and testing devices needed to undertake maintenance are obtained in accordance with established procedures and checked for correct operation and safety
1.36 Preparatory work is checked to ensure no damage has occurred and complies with requirements

Outcome 2
Carry out maintenance in various work locations

Evidence requirements
2.1 OHS risk control measures and procedures for carrying out the work are followed
2.2 Determine the need to test or measure live in strict accordance with the OHS requirements and when necessary conducted within established safety procedures
2.3 Circuits/machinery/plant are checked as being isolated where necessary in strict accordance with OHS requirements and procedure
2.4 Maintenance is carried out in compliance with technical standards and job specifications and requirements
2.5 Decisions for dealing with unexpected situations are made from discussions with appropriate persons and job specifications and requirements
2.6 Methods for dealing with unexpected situations are selected on the basis of safety and specified work outcomes
2.7 Ongoing checks of the quality of maintenance are undertaken in accordance with job specification, technical standards and/or regulatory requirements
2.8 Work efficiently without waste of materials and energy or damage to apparatus, circuits, the surrounding environment or other services.

Outcome 3
Complete work

Evidence Requirements
3.1 OHS risk control work completion measures and procedures are followed
3.2 Work site/location is made safe in accordance with established safety procedures
3.3 Verify maintenance confirm to requirements
3.4 Work completion is documented and appropriate person(s) notified in accordance with established procedures.

Planned review date	30th April, 2020

Status information and last date for assessment for superseded versions

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Registration	1	30th April, 2017	N/A