

## OCCUPATIONAL SKILLS PROGRAMME CURRICULUM DOCUMENT

IN LINE WITH THE QQSF POLICY (2021) OCCUPATIONAL QUALIFICATION TYPE (NOMENCLATURE)

| SKILLS PROGRAMME              | SKILLS PROGRAMME ID                                             | TITLE (DESCRIPTOR)                                          | NQF LEVEL        | CREDITS                                                                              |
|-------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------|------------------|--------------------------------------------------------------------------------------|
|                               | SP-260302                                                       | Renewable Energy Workshop Assistant                         | 4                | 58                                                                                   |
| CURRICULUM CODE               | 900524-000-01-00                                                |                                                             |                  |                                                                                      |
| PARTNER DETAILS               | ORGANISATION NAME                                               | WEBSITE ADDRESS                                             | TELEPHONE NUMBER | LOGO                                                                                 |
| QUALITY PARTNER - DEVELOPMENT | The Energy & Water Sector Education Training Authority (EWSETA) | <a href="https://ewseta.org.za/">https://ewseta.org.za/</a> | 011 274-4700     |  |

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## SECTION 1: CURRICULUM SUMMARY

### 1.1 Occupational Information:

#### 1.1.1 Associated, Organising Framework for Occupations (OFO) Occupational Code and Title

311301 — Electrical Engineering Technician

#### 1.1.2 Occupation/Specialisation/Part-Qualification/Skills Programme Type, Title, NQF Level, Credits and Curriculum Code, addressed by this Curriculum.

| TYPE             | TITLE                               | NQF LEVEL | CREDITS | CURRICULUM CODE  |
|------------------|-------------------------------------|-----------|---------|------------------|
| Skills Programme | Renewable Energy Workshop Assistant | 4         | 58      | 900524-000-01-00 |

#### 1.1.3 Alternative titles used by industry:

None

### 1.2 Curriculum Information:

#### 1.2.1 Articulation for Skills Programmes

##### (a) Work Opportunities:

Learners who successfully complete the Renewable Energy Workshop Assistant Skills Programme will be able to access entry-level employment opportunities within the renewable energy and green economy sector.

##### (b) Learning Opportunities:

Learners qualified from this skills programme may further their studies by enrolling in the following qualifications and skills programmes related to this skills programme, subject to adhering to their minimum entry requirements:

- SAQA ID: 99447: Occupational Certificate: Solar Photovoltaic Service Technician, NQF Level: 5 Credits: 344
- SAQA ID: 94619: Occupational Certificate: Hot Water System Installer (Solar Water Installer), NQF Level: 4 Credits: 67
- SAQA ID: 99559: Occupational Certificate: Wind Turbine Service Technician NQF Level: 5 Credits: 123
- SAQA ID: 120883: National Occupational Certificate: Solar Photovoltaic Standalone Systems Installer, NQF Level 4, Credits: 211
- SAQA ID: 120885: Occupational Certificate: Solar Photovoltaic Standalone System Mounter, NQF Level: 4, Credits: 84
- SP ID: 250819: Skills Programme: Solar Photovoltaic Installation Practitioner, NQF Level 4, Credits: 50
- SP ID: 250305: Skills Programme: Solar Photovoltaic Installation Planner, NQF Level 5, Credits: 60
- SP ID: 250311: Skills Programme: Solar Photovoltaic Installation Tester, NQF level, Credits: 60

### 1.3 Curriculum Structure:

#### 1.3.1 Knowledge/Theory Modules:

| MODULE CODE         | MODULE TITLE                                  | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|-----------------------------------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-01 | Introduction to Renewable Energy              | 4         | 4       | Blended or face-to-face or online |
| 900524-000-01-KM-02 | Equipment and Tools                           | 4         | 7       | Blended or face-to-face or online |
| 900524-000-01-KM-03 | Principles of working at Heights              | 3         | 3       | Blended or face-to-face or online |
| 900524-000-01-KM-04 | Basic Mechanical Concepts of Renewable Energy | 4         | 6       | Blended or face-to-face or online |
| 900524-000-01-KM-05 | Basics of Electricity                         | 3         | 4       | Blended or face-to-face or online |
| 900524-000-01-KM-06 | Workplace fundamentals                        | 4         | 5       | Blended or face-to-face or online |

Total number of credits: 29

#### 1.3.2 Practical Skill Modules:

| MODULE CODE         | MODULE TITLE                                                                         | NQF LEVEL | CREDITS | MODE OF DELIVERY |
|---------------------|--------------------------------------------------------------------------------------|-----------|---------|------------------|
| 900524-000-01-PM-01 | Use tools, measuring instruments, and equipment                                      | 3         | 7       | Face-to-face     |
| 900524-000-01-PM-02 | Plan and assist in the installation of the renewable energy plant.                   | 4         | 8       | Face-to-face     |
| 900524-000-01-PM-03 | Mitigate and respond to hazards associated with Renewable Energy system installation | 3         | 8       | Face-to-face     |
| 900524-000-01-PM-04 | Conduct routine maintenance of equipment and store equipment and material            | 4         | 6       | Face-to-face     |

Total number of credits: 29

### 1.4 Entry Requirements:

NQF Level 3 qualification with Mathematics

## **1.5 Recognition of Prior Learning (RPL):**

### **1.5.1 RPL for Access:**

Learners may use the RPL process to gain access to training opportunities for a skills programme if they do not meet the formal, minimum entry requirements for admission. RPL assessment provides an alternative access route into a skills programme.

Such an RPL assessment may be developed, moderated, and conducted by the accredited Skills Development Provider which offers that specific skills programme. Such an assessment must ensure that the learner can display the equivalent level of competencies required for access, based on the NQF level descriptors.

### **1.5.2 RPL for Exemption:**

For exemption from modules through RPL, learners who have gained the stipulated competencies of the modules of a skills programme through any means of formal, informal or non-formal learning and/or work experience, may be awarded credits towards relevant modules, and gaps identified for training, which is then concluded.

### **1.5.3 RPL for awarding credits:**

Learners who have gained the stipulated competencies of the modules of a skills programme through any means of formal, informal or non-formal learning and/or work experience, may be awarded credits towards relevant modules, and gaps identified for training, which is then concluded.

For a Skills Programme, the accredited Skills Development Provider (SDP) must ensure all modular competency requirements are met before the FISA and keep a record of such evidence.

Upon successful completion of the FISA, RPL learners will be issued with the QCTO certificate for the skills programme. Quality Partners are responsible for ensuring the RPL mechanism and process for qualifications and part-qualification is approved by the QCTO.

## **1.6 List of Qualification(s)/Part- Qualification(s)/Skills Programme(s) Related to this Curriculum**

- Occupational Certificate: Solar Photovoltaic Service Technician  
NQF Level: 5 Credits: 344
- Occupational Certificate: Hot Water System Installer (Solar Water Installer) NQF Level: 4  
Credits: 67
- Occupational Certificate: Wind Turbine Service Technician  
NQF Level: 5 Credits

## SECTION 2: OCCUPATIONAL SKILLS PROGRAMME PROFILE

### 2.1 Purpose:

The purpose of this skills programme is to prepare a learner to operate as a Renewable Energy Workshop Assistant.

A Renewable Energy Workshop Assistant plans, prepares, and assists under supervision of technicians with installation, maintenance, energy production process, quality assurance and component assembly for Renewable Energy processes, systems, facilities, and equipment.

### 2.2 Tasks:

| TASK                                                                                         | LINKS TO ELO                                                                                    |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Use hand tools, power tools, and measuring instruments specific to renewable energy systems. | Use hand tools, power tools, and measuring instruments for component assembly and installation. |
| Assemble and install renewable energy systems and components                                 | Plan and install renewable energy components for plant operations.                              |
| Perform repairs, routine maintenance and care for tools and equipment                        | Perform routine maintenance and care for tools and equipment for operational readiness.         |

### 2.3 Occupational Task Details:

#### 2.3.1 Task 1:

**Use hand tools, power tools, and measuring instruments specific to renewable energy systems**

- (a) Unique Product or Service:
  - Compliant use of tools and equipment
- (b) Responsibilities:
  - Use tools, measuring equipment and equipment.
- (c) Context:
  - Process for the use of hand tools, power tools, and measuring instruments.

#### 2.3.2 Task 2: Assemble and install renewable energy systems and components

- (a) Unique Product or Service:
  - Functional and compliant tools
- (b) Responsibilities:
  - Plan and assist in the installation of renewable energy plant
  - Mitigate and respond to hazards associated with Renewable Energy system installation
- (c) Context:
  - Process of the assembling, and installation of renewable energy systems and components.

### **2.3.3 Task 3:**

#### **Perform repairs, routine maintenance and care for tools and equipment**

(a) Unique Product or Service:

- Ready to use tools and equipment

(b) Responsibilities:

- Conduct routine maintenance of equipment and store equipment and material

(c) Context

- Processes of performing repairs, routine servicing, and safe storage of tools and equipment.



## SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

### 3. Knowledge Module Specifications:

| MODULE CODE         | MODULE TITLE                                  | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|-----------------------------------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-01 | Introduction to Renewable Energy              | 4         | 4       | Blended or face-to-face or online |
| 900524-000-01-KM-02 | Equipment and Tools                           | 4         | 7       | Blended or face-to-face or online |
| 900524-000-01-KM-03 | Principles of working at Heights              | 3         | 3       | Blended or face-to-face or online |
| 900524-000-01-KM-04 | Basic Mechanical Concepts of Renewable Energy | 4         | 6       | Blended or face-to-face or online |
| 900524-000-01-KM-05 | Basics of Electricity                         | 3         | 4       | Blended or face-to-face or online |
| 900524-000-01-KM-06 | Workplace fundamentals                        | 4         | 5       | Blended or face-to-face or online |

#### 3.1 900524-000-01-KM-01, Introduction to Renewable Energy, NQF Level 4, Credits 4.

| MODULE CODE         | MODULE TITLE                     | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|----------------------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-01 | Introduction to Renewable Energy | 4         | 4       | Blended or face-to-face or online |

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to develop an understanding of Renewable Energy.

(b) List of Knowledge Topics:

| TOPIC CODE | TOPIC TITLE                                   | % OF TIME TO BE SPENT |
|------------|-----------------------------------------------|-----------------------|
| KM-01-KT01 | Institutions within the energy sector.        | 10                    |
| KM-01-KT02 | Legislative and economic frameworks.          | 20                    |
| KM-01-KT03 | Forms of renewable energy.                    | 15                    |
| KM-01-KT04 | Non-renewable energy versus Renewable energy. | 15                    |
| KM-01-KT05 | Occupational Health, Safety and Environment.  | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-01-KT01 INSTITUTIONS WITHIN THE ENERGY SECTOR 10% |                                          |                       |
|------------------------------------------------------|------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                   | TOPIC ELEMENT TITLE                      | % OF TIME TO BE SPENT |
| KT0101                                               | Government Departments and Their Role.   | 10                    |
| KT0102                                               | Functions and role of Eskom.             | 10                    |
| KT0103                                               | Private sector and energy generations.   | 30                    |
| KT0104                                               | Industry Association and functions.      | 30                    |
| KT0105                                               | Regulatory structures for energy supply. | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                         | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0101  | Explain the role of different regulatory structures in the management of energy in South Africa (SA)    | 50                    |
| IAC0102  | Explain the roles of different industry associations and the private sector in the management of energy | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-01-KT02 LEGISLATIVE AND ECONOMIC FRAMEWORKS 20% |                                                   |                       |
|----------------------------------------------------|---------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                 | TOPIC ELEMENT TITLE                               | % OF TIME TO BE SPENT |
| KT0201                                             | UN Framework Convention on Climate Change.        | 10                    |
| KT0202                                             | Provisions of the South African Constitution.     | 10                    |
| KT0203                                             | Government Policy on Energy and Renewable Energy. | 30                    |
| KT0204                                             | Basic provisions of the Electricity Act of 1987.  | 20                    |
| KT0205                                             | National Environmental Management Act of 1998.    | 20                    |
| KT0206                                             | Gas Act (Biogas).                                 | 10                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                   | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0201  | Interpret the legislative provisions regulating public access, standards, and management of energy in the country | 60                    |
| IAC0202  | Explain the national and international policies for renewable energy and management of climate change             | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-01-KT03 FORMS OF RENEWABLE ENERGY 15% |                             |                       |
|------------------------------------------|-----------------------------|-----------------------|
| TOPIC ELEMENT CODE                       | TOPIC ELEMENT TITLE         | % OF TIME TO BE SPENT |
| KT0301                                   | Solar Photo Voltaic Energy. | 15                    |
| KT0302                                   | Wind Energy.                | 15                    |
| KT0303                                   | Hydro-electric power.       | 15                    |
| KT0304                                   | Biomass Energy.             | 10                    |
| KT0305                                   | Geothermal Energy.          | 5                     |
| KT0306                                   | Hydrogenation.              | 5                     |
| KT0307                                   | Biogas.                     | 15                    |
| KT0308                                   | Concentrated solar power.   | 15                    |
| KT0309                                   | Tidal Energy.               | 5                     |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                            | % OF TIME TO BE SPENT |
|----------|----------------------------------------------------------------------------|-----------------------|
| IAC0301  | Explain the sources of energy for different forms of renewable energy.     | 20                    |
| IAC0302  | Compare the differences between the different forms of renewable energy.   | 40                    |
| IAC0303  | Explain the process for energy generation for each renewable energy source | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-01-KT04 NON-RENEWABLE ENERGY VERSUS RENEWABLE ENERGY 15% |                                  |                       |
|-------------------------------------------------------------|----------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                          | TOPIC ELEMENT TITLE              | % OF TIME TO BE SPENT |
| KT0401                                                      | Sources of Renewable Energy.     | 15                    |
| KT0402                                                      | Sources of non-renewable energy. | 15                    |
| KT0403                                                      | Functional differences.          | 20                    |
| KT0404                                                      | Economic differences.            | 20                    |
| KT0405                                                      | Environmental Differences.       | 30                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                           | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------|-----------------------|
| IAC0401  | Explain the environmental concerns regarding different sources of energy                  | 20                    |
| IAC0402  | Explain the process for the production of energy from renewable and non-renewable sources | 40                    |
| IAC0403  | Analyse the functional and economic implications for renewable and non-renewable energy.  | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-01-KT05 OCCUPATIONAL HEALTH, SAFETY AND ENVIRONMENT 40% |                                                                                                     |                       |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                         | TOPIC ELEMENT TITLE                                                                                 | % OF TIME TO BE SPENT |
| KT0501                                                     | Occupational health and safety legislation.                                                         | 10                    |
| KT0502                                                     | Fundamentals of securing worksites.                                                                 | 10                    |
| KT0503                                                     | Safety precautions and safe practices for working within the industry (including electrical burns). | 10                    |
| KT0504                                                     | Emergency Preparation and Evacuation.                                                               | 10                    |
| KT0505                                                     | Hazard identification and risk principles.                                                          | 10                    |
| KT0506                                                     | Personal protective equipment.                                                                      | 10                    |
| KT0507                                                     | Environmental protection. Pollution concepts and application.                                       | 10                    |
| KT0508                                                     | Types of Fires and Fire Prevention Measures.                                                        | 10                    |
| KT0509                                                     | First Aid.                                                                                          | 5                     |
| KT0510                                                     | Insect and snake bites.                                                                             | 5                     |
| KT0511                                                     | Types of dangerous plants and preventative measures.                                                | 5                     |
| KT0512                                                     | Electrical safety and lock-out procedures.                                                          | 5                     |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                                            | % OF TIME TO BE SPENT |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0501  | Discuss the concept and applications relevant to environmental management, protection, waste and techniques for waste management.          | 20                    |
| IAC0502  | Identify and discuss the different insects and plants posing health and safety concerns for working within a renewable energy environment. | 10                    |
| IAC0503  | Explain the workplace requirements for compliance with occupational health and safety legislation.                                         | 20                    |
| IAC0504  | Explain different types of fire and measures for prevention.                                                                               | 10                    |
| IAC0505  | Discuss requirements and management of first aid within the renewable energy plant environment                                             | 10                    |

|         |                                                                                                              |    |
|---------|--------------------------------------------------------------------------------------------------------------|----|
| IAC0506 | Explain the importance of security at worksite                                                               | 15 |
| IAC0507 | Describe different types of hazards and risks impacting on worksite for different forms of renewable energy. | 15 |

### 3.1.2 Criteria for Accreditation

#### Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools and standards for internal assessment</li> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> <li>Stationery for learners and facilitators (pens, paper, markers, flipchart paper).</li> <li>Printed learning materials (learner workbooks, assessment sheets).</li> <li>Printer ink and photocopy paper.</li> <li>Basic PPE for demonstration (gloves, safety glasses, dust masks).</li> <li>Cleaning and hygiene supplies for training venue compliance.</li> <li>Renewable energy demonstration consumables (small wiring, connectors, sample components).</li> <li>Digital resources and data bundles (if online or blended learning is applied).</li> </ul> |
| <b>CONSUMABLES</b>                | <ul style="list-style-type: none"> <li>None</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>Facilitators must hold a relevant qualification at NQF Level 4 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> <li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |
| <b>FACILITATOR/LEARNER RATIO</b>       | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

**Legal Requirements:**

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>• CIPC registered entity</li> <li>• Valid Tax Clearance Certificate</li> <li>• Compliant and current health and safety audit report</li> <li>• Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>• Protection of Personal Information (POPI) policy</li> </ul> |

**Additional Requirements:**

| SKILLS DEVELOPMENT PROVIDER (SDP) |
|-----------------------------------|
| None                              |

**3.1.3 Exemptions**

None

**3.2 900524-000-01-KM-02, Equipment and Tools, NQF Level 4, Credits 7**

| MODULE CODE         | MODULE TITLE        | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|---------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-02 | Equipment and Tools | 4         | 7       | Blended or face-to-face or online |

**(a) Purpose of Knowledge Module:**

The main focus of the learning in this knowledge module is to develop an understanding of equipment and tools.

**(b) List of Knowledge Topics:**

| TOPIC CODE | TOPIC TITLE                                | % OF TIME TO BE SPENT |
|------------|--------------------------------------------|-----------------------|
| KM-02-KT01 | Types of Hand tools and power tools        | 30                    |
| KM-02-KT02 | Marking-off equipment.                     | 20                    |
| KM-02-KT03 | Lifting equipment.                         | 30                    |
| KM-02-KT04 | Soldering equipment and wiring techniques. | 10                    |
| KM-02-KT05 | Equipment for riveting.                    | 10                    |

**(c) Detailing each topic listed above into topic elements:**

| KM-02-KT01 TYPES OF HAND TOOLS AND POWER TOOLS 30% |                                              |                       |
|----------------------------------------------------|----------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                 | TOPIC ELEMENT TITLE                          | % OF TIME TO BE SPENT |
| KT0101                                             | Types, uses and care of hand tools.          | 40                    |
| KT0102                                             | Types, use and care of portable power tools. | 20                    |
| KT0103                                             | Types uses and care of fixed power tools.    | 40                    |

**(d) Internal Assessment Criteria (IAC) and Weight**

| IAC CODE | IAC DESCRIPTION                                        | % OF TIME TO BE SPENT |
|----------|--------------------------------------------------------|-----------------------|
| IAC0101  | Describe hand tools and describe their uses.           | 30                    |
| IAC0102  | Describe portable power tools and describe their uses. | 30                    |
| IAC0103  | Describe fixed power tools and describe their uses.    | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-02-KT02 MARKING-OFF EQUIPMENT 20% |                                                                                                                                                                                                                                                                                                                |                       |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                   | TOPIC ELEMENT TITLE                                                                                                                                                                                                                                                                                            | % OF TIME TO BE SPENT |
| KT0201                               | Engineering drawings.                                                                                                                                                                                                                                                                                          | 20                    |
| KT0202                               | Templates and marking off equipment (include marking out tables, squares, rulers, straight edges, scribing blocks, height gauges, trammels, protractors, vee blocks, parallels, dividers, vernier callipers, measuring tapes, centre punches, marking agents [pens, paints, chalk, marking blue, chalk line]). | 20                    |
| KT0203                               | Materials to be marked off (aluminium, copper, plastics, metals, paper) and their defects (lamination, blisters, pickling).                                                                                                                                                                                    | 20                    |
| KT0204                               | Methods and sequences used for marking off.                                                                                                                                                                                                                                                                    | 20                    |
| KT0205                               | Care, maintenance and storage of marking-off equipment.                                                                                                                                                                                                                                                        | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                  | % OF TIME TO BE SPENT |
|----------|------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0201  | Explain the importance of engineering drawings in the marking-off process.                                       | 20                    |
| IAC0202  | Explain the use of different types of marking-off equipment and their related defects                            | 10                    |
| IAC0203  | Explain the importance of caring for, calibrating and correctly storing templates and marking-off equipment.     | 20                    |
| IAC0204  | Explain the different types of materials on which marking-off takes place                                        | 10                    |
| IAC0205  | Describe the methods and sequences for marking off using templates and marking off equipment.                    | 10                    |
| IAC0206  | Explain the importance of accuracy and precision when marking off and the implications of incorrect marking off. | 10                    |
| IAC0207  | Explain the safety aspects of marking-off procedures                                                             | 20                    |

(c) Detailing each topic listed above into topic elements:

| KM-02-KT03 LIFTING EQUIPMENT 30% |                                                                                                                                                                                                                                                                                                  |                       |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE               | TOPIC ELEMENT TITLE                                                                                                                                                                                                                                                                              | % OF TIME TO BE SPENT |
| KT0301                           | Lifting equipment (chain slings, rope slings, steel wire slings, synthetic web slings, shackles, eyebolts, guide ropes, plate grabs, chain blocks, rope tackles/rope blocks jacks, come-along, small floor cranes, hoists [tirfor, coffin], lifting brackets, fasteners, colour codes of slings. | 15                    |
| KT0302                           | Lifting equipment capacity.                                                                                                                                                                                                                                                                      | 15                    |
| KT0303                           | Equipment defects.                                                                                                                                                                                                                                                                               | 15                    |
| KT0304                           | Principles of operation of lifting equipment.                                                                                                                                                                                                                                                    | 15                    |
| KT0305                           | Lifting processes (loads, communication methods [hand signals, whistles, flags, electronic types], load calculations, and lifting or slinging processes).                                                                                                                                        | 20                    |
| KT0306                           | Safety aspects about lifting.                                                                                                                                                                                                                                                                    | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                             | % OF TIME TO BE SPENT |
|----------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0301  | Describe lifting equipment and state their lifting capacity                                                                 | 8                     |
| IAC0302  | Describe the principles of operation of the various types of lifting equipment and explain when they are selected and used. | 9                     |
| IAC0303  | Explain the equipment inspection process.                                                                                   | 8                     |
| IAC0304  | Describe how load weights are calculated.                                                                                   | 10                    |
| IAC0305  | Explain the concept of safe working load (SWL).                                                                             | 8                     |
| IAC0306  | Describe lifting and slinging processes.                                                                                    | 8                     |
| IAC0307  | Describe the importance of ensuring that the load does not exceed the capacity of the lifting equipment.                    | 8                     |
| IAC0308  | Explain at what point the services of a professional rigger must be procured                                                | 8                     |
| IAC0309  | Describe communication methods used during lifting and rigging.                                                             | 8                     |
| IAC0310  | Describe the care and storage of lifting equipment.                                                                         | 10                    |
| IAC0311  | Describe the safety aspects of lifting, including appropriate PPE.                                                          | 15                    |

(c) Detailing each topic listed above into topic elements:

| KM-02-KT04 SOLDERING EQUIPMENT AND WIRING TECHNIQUES 10% |                                                                                                                                                                                                                                                |                       |
|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                       | TOPIC ELEMENT TITLE                                                                                                                                                                                                                            | % OF TIME TO BE SPENT |
| KT0401                                                   | Soldering equipment (soldering irons; insulation strippers [thermal-type insulation strippers and mechanical wire strippers]; wire bending tools; solder; flux; basic soldering connections [turret, bifurcated, hook, surface mounts, cups]). | 20                    |
| KT0402                                                   | Soldering techniques.                                                                                                                                                                                                                          | 15                    |
| KT0403                                                   | Characteristics of a good solder joint.                                                                                                                                                                                                        | 10                    |
| KT0404                                                   | Hazards associated with the use of soldering equipment (incorrect soldering iron selection, incorrect solder type, lead poisoning, fumes, burns and fire.                                                                                      | 10                    |
| KT0405                                                   | Wiring (protection, marking, splicing, crimping, soldered splices).                                                                                                                                                                            | 10                    |
| KT0406                                                   | Cable shielding and termination (shielded cable connector termination, grounding sheath termination).                                                                                                                                          | 15                    |
| KT0407                                                   | Binding (lacing, self-clinching cable straps).                                                                                                                                                                                                 | 10                    |
| KT0408                                                   | Hazards when working with wiring.                                                                                                                                                                                                              | 10                    |



(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                                                                                                                           | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0401  | Describe the handling, use and storage of soldering equipment.                                                                                                                                                            | 20                    |
| IAC0402  | Describe soldering techniques (including repairing a wire by soldering).                                                                                                                                                  | 15                    |
| IAC0403  | Describe the characteristics of a good solder joint in terms of electrical and mechanical integrity (characteristics must include scorching, dirt, oxidation, colour, residue, and electrical and mechanical connection). | 20                    |
| IAC0404  | Describe the hazards associated with soldering and the safety precautions to be observed when soldering and handling soldering equipment.                                                                                 | 15                    |
| IAC0405  | Explain the various techniques associated with the repair of wiring.                                                                                                                                                      | 15                    |
| IAC0406  | Describe the hazards associated with wiring repair techniques.                                                                                                                                                            | 15                    |

(c) Detailing each topic listed above into topic elements:

| KM-02-KT05 EQUIPMENT FOR RIVETING 10 % |                                                                     |                       |
|----------------------------------------|---------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                     | TOPIC ELEMENT TITLE                                                 | % OF TIME TO BE SPENT |
| KT0501                                 | Equipment for riveting (drilling machine, pop rivet [gun], rivets). | 25                    |
| KT0502                                 | Materials that can be riveted (metal and plastics).                 | 25                    |
| KT0503                                 | Riveting techniques.                                                | 25                    |
| KT0504                                 | Safety requirements.                                                | 25                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                  | % OF TIME TO BE SPENT |
|----------|------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0501  | Describe the use of a special tool for riveting PV modules                                                       | 20                    |
| IAC0502  | Describe the preparatory activities before riveting is performed.                                                | 20                    |
| IAC0503  | Describe the technique for riveting.                                                                             | 20                    |
| IAC0504  | Describe the use of a special tool for riveting PV modules.                                                      | 20                    |
| IAC0505  | Describe the hazards associated with riveting and the safety precautions to be observed when riveting materials. | 20                    |

### 3.2.2 Criteria for Accreditation

Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> </ul> |



|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <ul style="list-style-type: none"> <li>• All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>• Tools and standards for internal assessment</li> <li>• Record-keeping systems to capture learner data and issue a statement of results.</li> <li>• Stationery for learners and facilitators (pens, paper, markers, flipchart paper).</li> <li>• Printed learning materials (learner workbooks, assessment sheets).</li> <li>• Printer ink and photocopy paper.</li> <li>• Basic PPE for demonstration (gloves, safety glasses, dust masks).</li> <li>• Cleaning and hygiene supplies for training venue compliance.</li> <li>• Renewable energy demonstration consumables (small wiring, connectors, sample components).</li> <li>• Digital resources and data bundles (if online or blended learning is applied).</li> </ul> |
| <b>CONSUMABLES</b> | <ul style="list-style-type: none"> <li>• None</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

#### Human Resource Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b>   | <ul style="list-style-type: none"> <li>• Facilitators must hold a relevant qualification at NQF Level 4 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>• Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> <li>• Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |
| <b>FACILITATOR/LEARNER RATIO</b>         | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

#### Legal Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b>   | <ul style="list-style-type: none"> <li>• CIPC registered entity</li> <li>• Valid Tax Clearance Certificate</li> <li>• Compliant and current health and safety audit report</li> <li>• Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>• Protection of Personal Information (POPI) policy</li> </ul> |

#### Additional Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |
|------------------------------------------|
| None                                     |

### 3.2.3 Exemptions

None

### 3.3 900524-000-01-KM-03, Principles of working at Heights, NQF Level 3, Credits 3.

| MODULE CODE         | MODULE TITLE                     | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|----------------------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-03 | Principles of working at Heights | 3         | 3       | Blended or face-to-face or online |

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to develop an understanding of the principles of working at heights.

(b) List of Knowledge Topics:

| TOPIC CODE | TOPIC TITLE                  | % OF TIME TO BE SPENT |
|------------|------------------------------|-----------------------|
| KM-03-KT01 | Harness.                     | 15                    |
| KM-03-KT02 | Fall Prevention.             | 15                    |
| KM-03-KT03 | Vertical fall arrest system. | 15                    |
| KM-03-KT04 | Fall arrest lanyards.        | 15                    |
| KM-03-KT05 | Dropped objects.             | 10                    |
| KM-03-KT06 | Self-retracting lifelines.   | 10                    |
| KM-03-KT07 | Rescue plan.                 | 20                    |

(c) Detailing each topic listed above into topic elements:

| KM-03-KT01 HARNESS 15% |                     |                       |
|------------------------|---------------------|-----------------------|
| TOPIC ELEMENT CODE     | TOPIC ELEMENT TITLE | % OF TIME TO BE SPENT |
| KT0101                 | Pre-use inspection  | 25                    |
| KT0102                 | Fitting.            | 25                    |
| KT0103                 | Documentation.      | 25                    |
| KT0104                 | Maintenance.        | 25                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                           | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------|-----------------------|
| IAC0101  | Explain the pre-use inspection and maintenance procedures of the harness. | 40                    |
| IAC0102  | Explain the fitting procedures for the harness.                           | 40                    |
| IAC0103  | Explain the importance of proper documentation in the use of the harness. | 20                    |

(c) Detailing each topic listed above into topic elements:

| KM-03-KT02 FALL PREVENTION 15% |                                           |                       |
|--------------------------------|-------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE             | TOPIC ELEMENT TITLE                       | % OF TIME TO BE SPENT |
| KT0201                         | Fall prevention over fall arrest.         | 20                    |
| KT0202                         | Pre-use inspection.                       | 20                    |
| KT0203                         | Correct attachments to anchor points.     | 20                    |
| KT0204                         | Correct attachments to the harness.       | 20                    |
| KT0205                         | The importance of using work positioning. | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                               | % OF TIME TO BE SPENT |
|----------|-----------------------------------------------------------------------------------------------|-----------------------|
| IAC0201  | Explain the correct attachment to the anchor and harness and consequences of making mistakes. | 30                    |
| IAC0202  | Explain measures to prevent falling over fall arrest.                                         | 30                    |
| IAC0203  | Explain the procedures and importance of pre-use inspections.                                 | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-03-KT03 VERTICAL FALL ARREST SYSTEM 15% |                                    |                       |
|--------------------------------------------|------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                         | TOPIC ELEMENT TITLE                | % OF TIME TO BE SPENT |
| KT0301                                     | Legal requirements.                | 10                    |
| KT0302                                     | Pre-use inspection.                | 15                    |
| KT0303                                     | Correct attachment and detachment. | 20                    |
| KT0304                                     | Correct use.                       | 20                    |
| KT0305                                     | Periodic inspections.              | 15                    |
| KT0306                                     | Correct documentation.             | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                       | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0301  | Explain the procedures and implications of pre-use and periodic inspection of the fall arrest system. | 50                    |
| IAC0302  | Explain the correct attachment, detachment, and use of the vertical fall arrest system.               | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-03-KT04 FALL ARREST LANYARDS 15 % |                                                        |                       |
|--------------------------------------|--------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                   | TOPIC ELEMENT TITLE                                    | % OF TIME TO BE SPENT |
| KT0401                               | Legal Requirements.                                    | 20                    |
| KT0402                               | Pre-use inspection.                                    | 15                    |
| KT0403                               | Correct attachment to the harness.                     | 10                    |
| KT0404                               | Fall factor.                                           | 10                    |
| KT0405                               | Fall indicators.                                       | 10                    |
| KT0406                               | Twin and single arrest lanyard.                        | 10                    |
| KT0407                               | Approved anchor points for attachments.                | 15                    |
| KT0408                               | The importance of always using the fall arrest system. | 10                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                       | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0401  | Explain the procedures and implications of pre-use and periodic inspection of the fall arrest system. | 50                    |
| IAC0402  | Explain the correct attachment, detachment, and use of the vertical fall arrest system.               | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-03-KT05 DROPPED OBJECTS 10 % |                     |                       |
|---------------------------------|---------------------|-----------------------|
| TOPIC ELEMENT CODE              | TOPIC ELEMENT TITLE | % OF TIME TO BE SPENT |
| KT0501                          | Risks.              | 50                    |
| KT0502                          | Risk reductions.    | 50                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                         | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------|-----------------------|
| IAC0501  | Explain the risks and implications for dropped objects. | 50                    |
| IAC0502  | Explain measures to reduce risks from dropped objects.  | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-03-KT06 SELF-RETRACTING LIFELINES 10 % |                                                        |                       |
|-------------------------------------------|--------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                        | TOPIC ELEMENT TITLE                                    | % OF TIME TO BE SPENT |
| KT0601                                    | Fall protection system during actual work at heights.  | 20                    |
| KT0602                                    | Different allowed maximum angles.                      | 20                    |
| KT0603                                    | How to attach correctly to the harness.                | 20                    |
| KT0604                                    | Approved anchor points for SRL fall protection system. | 20                    |
| KT0605                                    | Pre-use inspection                                     | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                              | % OF TIME TO BE SPENT |
|----------|--------------------------------------------------------------|-----------------------|
| IAC0601  | Explain the importance of allowed maximum angles             | 30                    |
| IAC0602  | Explain the anchor points for the SRL fall protection system | 30                    |
| IAC0603  | Explain the procedures and importance of pre-use inspection  | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-03-KT07 RESCUE PLAN 20 % |                      |                       |
|-----------------------------|----------------------|-----------------------|
| TOPIC ELEMENT CODE          | TOPIC ELEMENT TITLE  | % OF TIME TO BE SPENT |
| KT0701                      | Rescue planning      | 20                    |
| KT0702                      | First Aid and triage | 20                    |
| KT0703                      | Emergency services   | 20                    |
| KT0704                      | Documentation        | 20                    |
| KT0705                      | Reporting            | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                | % OF TIME TO BE SPENT |
|----------|--------------------------------------------------------------------------------|-----------------------|
| IAC0701  | Describe the processes and requirements for rescue planning working at heights | 25                    |
| IAC0702  | Explain the importance and processes for first aid and triage                  | 25                    |
| IAC0703  | Explain the role of emergency services                                         | 25                    |

|         |                                                      |    |
|---------|------------------------------------------------------|----|
| IAC0704 | Explain the reporting and documentation requirements | 25 |
|---------|------------------------------------------------------|----|

### 3.3.2 Criteria for Accreditation

#### Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools and standards for internal assessment</li> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> <li>Printed rescue plans, checklists, and inspection forms</li> </ul> |
| <b>CONSUMABLES</b>                | <ul style="list-style-type: none"> <li>Fall-arrest harness inspection tags</li> <li>Lanyard and lifeline demo tags / labels</li> <li>Rope, slings and attachment samples (training use)</li> <li>PPE consumables (gloves)</li> <li>Dummy weights or training dummies for rescue simulations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>Facilitators must hold a relevant qualification at NQF Level 4 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> <li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |

#### Legal Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>CIPC registered entity</li> <li>Valid Tax Clearance Certificate</li> <li>Compliant and current health and safety audit report</li> <li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>Protection of Personal Information (POPI) policy</li> </ul> |

#### Additional Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |
|-----------------------------------|
| None                              |

### 3.3.3 Exemptions

None

### 3.4 900524-000-01-KM-04, Basic Mechanical Concepts of Renewable Energy, NQF Level 4, Credits 6

| MODULE CODE         | MODULE TITLE                                  | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|-----------------------------------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-04 | Basic Mechanical Concepts of Renewable Energy | 4         | 6       | Blended or face-to-face or online |

#### (a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to develop an understanding of the basic mechanical concepts of renewable energy.

#### (b) List of Knowledge Topics:

| TOPIC CODE | TOPIC TITLE.                                                    | % OF TIME TO BE SPENT |
|------------|-----------------------------------------------------------------|-----------------------|
| KM-04-KT01 | Mechanical safety                                               | 5                     |
| KM-04-KT02 | The principles of bolted and welded connections.                | 15                    |
| KM-04-KT03 | Use of manual tightening and measuring tools.                   | 15                    |
| KM-04-KT04 | Wind turbine Mechanical components and their functions.         | 15                    |
| KM-04-KT05 | Solar Energy Mechanical Components (Residential and Commercial) | 15                    |
| KM-04-KT06 | Gas Energy Mechanical Components.                               | 10                    |
| KM-04-KT07 | Hydroelectric Energy.                                           | 15                    |
| KM-04-KT08 | Geothermal Power plant mechanical components.                   | 10                    |

#### (c) Detailing each topic listed above into topic elements:

| KM-04-KT01 MECHANICAL SAFETY 5% |                                          |                       |
|---------------------------------|------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE              | TOPIC ELEMENT TITLE                      | % OF TIME TO BE SPENT |
| KT0101                          | Importance of mechanical safety.         | 20                    |
| KT0102                          | Mechanical Safety signs.                 | 30                    |
| KT0103                          | Types of PPE.                            | 20                    |
| KT0104                          | The importance of appropriate isolation. | 30                    |

#### (d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                            | % OF TIME TO BE SPENT |
|----------|----------------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0101  | Explain the importance of mechanical safety around renewable energy installations.                                         | 10                    |
| IAC0102  | Explain the meaning of the different safety signs and the importance of adherence to them.                                 | 40                    |
| IAC0103  | Explain the importance of appropriate isolation when working with mechanical components of renewable energy installations. | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-04-KT02 THE PRINCIPLES OF BOLTED AND WELDED CONNECTIONS 15 % |                                                 |                       |
|-----------------------------------------------------------------|-------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                              | TOPIC ELEMENT TITLE                             | % OF TIME TO BE SPENT |
| KT0201                                                          | The principles of bolted connections.           | 25                    |
| KT0202                                                          | The locations of bolted and welded connections. | 25                    |
| KT0203                                                          | Inspections of welded connections.              | 25                    |
| KT0204                                                          | Bolt connections and correct tightening tools.  | 25                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                             | % OF TIME TO BE SPENT |
|----------|-----------------------------------------------------------------------------|-----------------------|
| IAC0201  | Explain the correct use of tightening tools and inspect bolt connections.   | 25                    |
| IAC0202  | Explain the different locations of important welded and bolted connections. | 25                    |
| IAC0203  | Explain the visual inspection of welded connections.                        | 25                    |
| IAC0204  | Explain the principles of bolted connections.                               | 25                    |

(c) Detailing each topic listed above into topic elements:

| KM-04-KT03 USE OF MANUAL TIGHTENING AND MEASURING TOOLS 15 % |                                               |                       |
|--------------------------------------------------------------|-----------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                           | TOPIC ELEMENT TITLE                           | % OF TIME TO BE SPENT |
| KT0301                                                       | Metric system.                                | 17                    |
| KT0302                                                       | Selecting and using the correct manual tools. | 17                    |
| KT0303                                                       | Correctly setting and using a torque wrench.  | 17                    |
| KT0304                                                       | Feeler gauges.                                | 16                    |
| KT0305                                                       | Calipers.                                     | 16                    |
| KT0306                                                       | Dial gauge.                                   | 17                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                                     | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0301  | Explain the use of the following tools: callipers, dial gauges, and feeler gauges, and recognize basic metric units of measurement. | 50                    |
| IAC0302  | Explain the correct setting and use of manual Tightening tools and a torque wrench.                                                 | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-04-KT04 WIND TURBINE MECHANICAL COMPONENTS AND THEIR FUNCTIONS 15% |                     |                       |
|-----------------------------------------------------------------------|---------------------|-----------------------|
| TOPIC ELEMENT CODE                                                    | TOPIC ELEMENT TITLE | % OF TIME TO BE SPENT |
| KT0401                                                                | Generator           | 15                    |
| KT0402                                                                | Blade               | 10                    |
| KT0403                                                                | Gearbox             | 15                    |
| KT0404                                                                | Nacelle             | 10                    |
| KT0405                                                                | Tower               | 10                    |
| KT0406                                                                | Brakes              | 10                    |
| KT0407                                                                | Rotor               | 10                    |
| KT0408                                                                | Yaw system          | 10                    |

|        |            |    |
|--------|------------|----|
| KT0409 | Controller | 10 |
|--------|------------|----|

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                 | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------------|-----------------------|
| IAC0401  | Explain the uses of different mechanical components of wind turbine             | 50                    |
| IAC0402  | Describe the mechanical role of each component in the functioning of the system | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-04-KT05 SOLAR ENERGY MECHANICAL COMPONENTS (RESIDENTIAL AND COMMERCIAL) 15 % |                      |                       |
|---------------------------------------------------------------------------------|----------------------|-----------------------|
| TOPIC ELEMENT CODE                                                              | TOPIC ELEMENT TITLE  | % OF TIME TO BE SPENT |
| KT0501                                                                          | Racking and Mounting | 10                    |
| KT0502                                                                          | Panels               | 20                    |
| KT0503                                                                          | Invertor             | 20                    |
| KT0504                                                                          | AC/DC Disconnects    | 10                    |
| KT0505                                                                          | Meters               | 10                    |
| KT0506                                                                          | Wiring               | 10                    |
| KT0507                                                                          | Batteries            | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                         | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0501  | Explain the uses of different mechanical components of solar energy system                              | 50                    |
| IAC0502  | Describe the mechanical role of each solar energy mechanical component in the functioning of the system | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-04-KT06 GAS ENERGY MECHANICAL COMPONENTS 10 % |                     |                       |
|--------------------------------------------------|---------------------|-----------------------|
| TOPIC ELEMENT CODE                               | TOPIC ELEMENT TITLE | % OF TIME TO BE SPENT |
| KT0601                                           | Compressor          | 15                    |
| KT0602                                           | Combustion Chamber  | 20                    |
| KT0603                                           | Exhaust             | 15                    |
| KT0604                                           | Engine              | 20                    |
| KT0605                                           | Alternator          | 20                    |
| KT0606                                           | Fuel System         | 10                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                       | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0601  | Explain the uses of different mechanical components of the gas energy system                          | 50                    |
| IAC0602  | Describe the mechanical role of each gas energy mechanical component in the functioning of the system | 50                    |



(c) Detailing each topic listed above into topic elements:

| KM-04-KT07 HYDROELECTRIC ENERGY 15 % |                     |                       |
|--------------------------------------|---------------------|-----------------------|
| TOPIC ELEMENT CODE                   | TOPIC ELEMENT TITLE | % OF TIME TO BE SPENT |
| KT0701                               | Generator           | 15                    |
| KT0702                               | Dam                 | 20                    |
| KT0703                               | Water turbine       | 15                    |
| KT0704                               | Turbine             | 20                    |
| KT0705                               | Reservoir           | 20                    |
| KT0706                               | Draft Tube          | 10                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                          | % OF TIME TO BE SPENT |
|----------|----------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0701  | Explain the uses of different mechanical components of the hydroelectric energy system                   | 50                    |
| IAC0702  | Describe the mechanical role of each hydroelectric mechanical component in the functioning of the system | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-04-KT08 GEOTHERMAL POWER PLANT MECHANICAL COMPONENTS 10% |                                    |                       |
|-------------------------------------------------------------|------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                          | TOPIC ELEMENT TITLE                | % OF TIME TO BE SPENT |
| KT0801                                                      | Steam turbine                      | 20                    |
| KT0802                                                      | Generator                          | 15                    |
| KT0803                                                      | Condenser                          | 10                    |
| KT0804                                                      | Cooling tower                      | 15                    |
| KT0805                                                      | Gas removal system                 | 20                    |
| KT0806                                                      | Hydrogen sulphide abatement system | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                   | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0801  | Explain the uses of different mechanical components of geothermal power plant system                              | 50                    |
| IAC0802  | Describe the mechanical role of each geothermal power plant mechanical component in the functioning of the system | 50                    |

### 3.4.2 Criteria for Accreditation

Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EQUIPMENT & TOOLS                 | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools and standards for internal assessment</li> </ul> |

|                    |                                                                                                                                                                                                                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <ul style="list-style-type: none"> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> </ul>                                                                                                                                                                         |
| <b>CONSUMABLES</b> | <ul style="list-style-type: none"> <li>Mechanical fasteners, rivets, gaskets, lubricants, sealing tape, bearings and springs (training samples), mounting brackets and rails, pipe sections, clamps, cleaning materials, marking materials, PPE consumables, and mechanical demonstration kits.</li> </ul> |

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>Facilitators must hold a relevant qualification at NQF Level 4 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> <li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |
| <b>FACILITATOR/LEARNER RATIO</b>       | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### Legal Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>CIPC registered entity</li> <li>Valid Tax Clearance Certificate</li> <li>Compliant and current health and safety audit report</li> <li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>Protection of Personal Information (POPI) policy</li> </ul> |

#### Additional Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |
|-----------------------------------|
| None                              |

### 3.4.3 Exemptions

None

### 3.5 900524-000-01-KM-05, Basic Electricity, NQF Level 3, Credits 4

| MODULE CODE         | MODULE TITLE      | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|-------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-05 | Basic Electricity | 3         | 4       | Blended or face-to-face or online |

#### (a) Purpose of Knowledge Module:

The focus of the learning in this knowledge module is to develop an understanding of basic electricity. The knowledge acquired will enable the learner to demonstrate an understanding of electrical safety, electricity components, sensors, electrical circuits, and measuring instruments enabling participants to carry out basic electrical tasks.

(b) List of Knowledge Topics:

| TOPIC CODE | TOPIC TITLE                      | % OF TIME TO BE SPENT |
|------------|----------------------------------|-----------------------|
| KM-05-KT01 | Introduction to electricity      | 4                     |
| KM-05-KT02 | Electrical Safety                | 4                     |
| KM-05-KT03 | Electrical components            | 24                    |
| KM-05-KT04 | Sensors                          | 23                    |
| KM-05-KT05 | Electrical circuit               | 27                    |
| KM-05-KT06 | Electrical measuring instruments | 18                    |

(c) Detailing each topic listed above into topic elements:

| KM-05-KT01 INTRODUCTION TO ELECTRICITY 4% |                                      |                       |
|-------------------------------------------|--------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                        | TOPIC ELEMENT TITLE                  | % OF TIME TO BE SPENT |
| KT0101                                    | Direct current                       | 25                    |
| KT0102                                    | Ohm's law                            | 25                    |
| KT0103                                    | Alternating current.                 | 25                    |
| KT0104                                    | Alternating current/ direct current. | 25                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                        | % OF TIME TO BE SPENT |
|----------|----------------------------------------------------------------------------------------|-----------------------|
| IAC0101  | Explain the characteristics and the differences between direct and alternating current | 50                    |
| IAC0102  | Explain the Ohm's law and its application                                              | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-05-KT02 ELECTRICAL SAFETY 4% |                                         |                       |
|---------------------------------|-----------------------------------------|-----------------------|
| TOPIC ELEMENT CODE              | TOPIC ELEMENT TITLE                     | % OF TIME TO BE SPENT |
| KT0201                          | Why electricity safety                  | 13                    |
| KT0202                          | Low/high voltage                        | 13                    |
| KT0203                          | PE and GFCI/RCD                         | 13                    |
| KT0204                          | Stored energy                           | 12                    |
| KT0205                          | Static electricity                      | 12                    |
| KT0206                          | Electrical Safety signs                 | 12                    |
| KT0207                          | Types of PPE                            | 13                    |
| KT0208                          | The importance of appropriate isolation | 12                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                                                                         | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0201  | Explain the reason for Electrical safety in wind turbine environment and the effects of electricity on the human body and the relation between current and contact time | 10                    |
| IAC0202  | Explain the definition of low and high voltage and the risks and hazards associated with them                                                                           | 10                    |
| IAC0203  | Explain the requirement of Having HV Training before performing HV Work.                                                                                                | 10                    |
| IAC0204  | Explain the Function and explain examples of GFCI/RCD and PE and Recognize circuits that are not protected by these                                                     | 20                    |

|         |                                                                                                      |    |
|---------|------------------------------------------------------------------------------------------------------|----|
| IAC0205 | Explain the different types of PPE used in handling electrical components and recognize safety signs | 20 |
| IAC0206 | Explains the Risks and Hazards of stored energy in electrical systems                                | 10 |
| IAC0207 | Explain static electricity risks and hazards                                                         | 10 |
| IAC0208 | Explain Electrical Isolation importance                                                              | 10 |

(c) Detailing each topic listed above into topic elements:

| KM-05-KT03 ELECTRICAL COMPONENTS 24% |                                |                       |
|--------------------------------------|--------------------------------|-----------------------|
| TOPIC ELEMENT CODE                   | TOPIC ELEMENT TITLE            | % OF TIME TO BE SPENT |
| KT0301                               | Resistor                       | 8                     |
| KT0302                               | Batteries                      | 8                     |
| KT0303                               | Switches                       | 8                     |
| KT0304                               | Contactors                     | 8                     |
| KT0305                               | Relays                         | 8                     |
| KT0306                               | Diodes                         | 8                     |
| KT0307                               | Bridge rectifiers              | 8                     |
| KT0308                               | Capacitors                     | 8                     |
| KT0309                               | Transformers                   | 8                     |
| KT0310                               | Generators and motors          | 8                     |
| KT0311                               | Fuses and circuit breakers     | 8                     |
| KT0312                               | Processors and control systems | 12                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                  | % OF TIME TO BE SPENT |
|----------|----------------------------------------------------------------------------------|-----------------------|
| IAC0301  | Discuss the function of resistors and electrical symbol                          | 10                    |
| IAC0302  | Discuss the function of batteries and capacitors and the electrical symbol       | 10                    |
| IAC0303  | Discuss the function of switches, relays and contactors and electrical symbol    | 10                    |
| IAC0304  | Discuss the function of bridge rectifiers and diodes and their electrical symbol | 10                    |
| IAC0305  | Discuss the function of transformers and electrical symbol                       | 10                    |
| IAC0306  | Discuss the function of generators / motors and their electrical symbol          | 10                    |
| IAC0307  | Discuss the function of Fuses and circuit breakers and their Electrical Symbol   | 10                    |
| IAC0308  | Discuss the function of processor control systems                                | 10                    |
| IAC0309  | Discuss the implications of handling and using any of the components wrongly     | 20                    |

(c) Detailing each topic listed above into topic elements:

| KM-05-KT04 SENSORS 23% |                         |                       |
|------------------------|-------------------------|-----------------------|
| TOPIC ELEMENT CODE     | TOPIC ELEMENT TITLE     | % OF TIME TO BE SPENT |
| KT0401                 | Introduction to sensors | 20                    |
| KT0402                 | Wind sensors            | 20                    |
| KT0403                 | Temperatures            | 20                    |
| KT0404                 | Position sensors        | 20                    |
| KT0405                 | Other sensors           | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                     | % OF TIME TO BE SPENT |
|----------|-----------------------------------------------------|-----------------------|
| IAC0401  | Explain the use of different sensors                | 50                    |
| IAC0402  | Explain types of sensors and their general function | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-05-KT05 ELECTRICAL CIRCUIT 27% |                                   |                       |
|-----------------------------------|-----------------------------------|-----------------------|
| TOPIC ELEMENT CODE                | TOPIC ELEMENT TITLE               | % OF TIME TO BE SPENT |
| KT0501                            | Symbols and diagrams              | 50                    |
| KT0502                            | Assembly of an electrical circuit | 50                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                   | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------|-----------------------|
| IAC0501  | Explain the use of different symbols and diagrams | 50                    |
| IAC0502  | Interpret and read a basic electrical diagram     | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-05-KT06 ELECTRICAL MEASURING INSTRUMENTS 18% |                                                      |                       |
|-------------------------------------------------|------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                              | TOPIC ELEMENT TITLE                                  | % OF TIME TO BE SPENT |
| KT0601                                          | Symbols and setting on electrical instruments        | 50                    |
| KT0602                                          | How to measure with electrical measuring instruments | 50                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                        | % OF TIME TO BE SPENT |
|----------|--------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0601  | Explain the symbols and setting of electrical measuring instruments for Voltage resistance and current | 50                    |
| IAC0602  | Explain the process of using and verifying electrical measuring instruments to measure                 | 50                    |

### 3.5.2 Criteria for Accreditation

Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools and standards for internal assessment</li> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> </ul> |
| <b>CONSUMABLES</b>                | <ul style="list-style-type: none"> <li>Electrical cables and connectors, terminals and lugs, electrical tape and heat shrink, fuses and circuit breakers, basic electrical components (resistors, diodes, capacitors), junction boxes, solder</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|  |                                                                            |
|--|----------------------------------------------------------------------------|
|  | and flux, cable management materials, PPE consumables, cleaning materials. |
|--|----------------------------------------------------------------------------|

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>Facilitators must hold a relevant qualification at NQF Level 4 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> <li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |
| <b>FACILITATOR/LEARNER RATIO</b>       | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### Legal Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>CIPC registered entity</li> <li>Valid Tax Clearance Certificate</li> <li>Compliant and current health and safety audit report</li> <li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>Protection of Personal Information (POPI) policy</li> </ul> |

#### Additional Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |
|-----------------------------------|
| None                              |

#### 3.5.3 Exemptions

None

#### 3.6 900524-000-01-KM-06, Workplace Fundamentals, NQF Level 4, Credits 5

| MODULE CODE         | MODULE TITLE           | NQF LEVEL | CREDITS | MODE OF DELIVERY                  |
|---------------------|------------------------|-----------|---------|-----------------------------------|
| 900524-000-01-KM-06 | Workplace Fundamentals | 4         | 5       | Blended or face-to-face or online |

##### 3.6.1 Module Details

(a) Purpose of Knowledge Module:

The main focus of the learning in this knowledge module is to develop an understanding of workplace fundamentals.

(b) List of Knowledge Topics:

| TOPIC CODE | TOPIC TITLE          | % OF TIME TO BE SPENT |
|------------|----------------------|-----------------------|
| KM-06-KT01 | Employment           | 20                    |
| KM-06-KT02 | Organisation of work | 10                    |

|            |                                                              |    |
|------------|--------------------------------------------------------------|----|
| KM-06-KT03 | Employer-Employee relationships                              | 15 |
| KM-06-KT04 | Concepts related to the performance of work                  | 15 |
| KM-06-KT05 | Ethics at Work                                               | 10 |
| KM-06-KT06 | Current trends influencing work                              | 10 |
| KM-06-KT07 | Fundamentals of Organisational Communication Skills          | 5  |
| KM-06-KT08 | Basic Emotional Intelligence                                 | 5  |
| KM-06-KT09 | Basic Introduction to Information Communication Technologies | 10 |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT01 EMPLOYMENT 20% |                                                                 |                       |
|---------------------------|-----------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE        | TOPIC ELEMENT TITLE                                             | % OF TIME TO BE SPENT |
| KT0101                    | An employee's legal rights                                      | 20                    |
| KT0102                    | Independent contractors (specialised)                           | 10                    |
| KT0103                    | Employer roles and responsibilities                             | 25                    |
| KT0104                    | Employee role and responsibilities                              | 25                    |
| KT0105                    | Role of organised labour in business, structures, and processes | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                         | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0101  | Define and describe the concepts which underpin employment, employment-related legislation and systems. | 20                    |
| IAC0102  | Explain the impact of these concepts on an employer and employee.                                       | 40                    |
| IAC0103  | Describe processes which govern employment, disputes, and other labour relations issues.                | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT02 ORGANISATION OF WORK 10% |                                                                                                              |                       |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                  | TOPIC ELEMENT TITLE                                                                                          | % OF TIME TO BE SPENT |
| KT0201                              | What is work, including products and services, paid and unpaid                                               | 20                    |
| KT0202                              | Work as sets of value-adding processes                                                                       | 20                    |
| KT0203                              | Work as collaboration - the role of teams in work processes.                                                 | 20                    |
| KT0204                              | How teams function                                                                                           | 20                    |
| KT0205                              | Meeting protocols for a variety of meeting types, including formal meetings and informal "stand-up" meetings | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                 | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------------|-----------------------|
| IAC0201  | Define and describe the concepts which underpin work and working relationships. | 30                    |
| IAC0202  | Explain the impact of the concepts on an employee and co-workers.               | 30                    |
| IAC0203  | Describe work procedures in terms of teams, meeting protocols and value-add.    | 40                    |



(c) Detailing each topic listed above into topic elements:

| KM-06-KT03- EMPLOYER-EMPLOYEE RELATIONSHIPS 15% |                        |                       |
|-------------------------------------------------|------------------------|-----------------------|
| TOPIC ELEMENT CODE                              | TOPIC ELEMENT TITLE    | % OF TIME TO BE SPENT |
| KT0301                                          | Employment contracts   | 30                    |
| KT0302                                          | Workplace procedures   | 20                    |
| KT0303                                          | Organisation values    | 20                    |
| KT0304                                          | Basic labour relations | 30                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                    | % OF TIME TO BE SPENT |
|----------|------------------------------------------------------------------------------------|-----------------------|
| IAC0301  | Define and describe the concepts which define employer and employee relationships. | 40                    |
| IAC0302  | Explain the impact of these concepts on an employer and employee.                  | 20                    |
| IAC0303  | Describe the process which governs employer-employee relationships.                | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT04 CONCEPTS RELATED TO THE PERFORMANCE OF WORK 15% |                                                            |                       |
|------------------------------------------------------------|------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                         | TOPIC ELEMENT TITLE                                        | % OF TIME TO BE SPENT |
| KT0401                                                     | Understanding rehearsal, concept development schedule, etc | 20                    |
| KT0402                                                     | Production components                                      | 20                    |
| KT0403                                                     | Stage Management (housekeeping)                            | 20                    |
| KT0404                                                     | Personal time management                                   | 20                    |
| KT0405                                                     | Time management                                            | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                      | % OF TIME TO BE SPENT |
|----------|----------------------------------------------------------------------|-----------------------|
| IAC0401  | Define and describe the concepts related to the performance of work. | 20                    |
| IAC0402  | Explain the impact of these concepts on the individual employee.     | 40                    |
| IAC0403  | Describe processes that govern the performance of work.              | 40                    |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT05 ETHICS AT WORK 10 % |                                                                                                                                         |                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE             | TOPIC ELEMENT TITLE                                                                                                                     | % OF TIME TO BE SPENT |
| KT0501                         | Definition and concepts                                                                                                                 | 10                    |
| KT0502                         | Industry standards for ethical behaviour                                                                                                | 10                    |
| KT0503                         | Unwritten but expected behaviours                                                                                                       | 20                    |
| KT0504                         | Lapses in ethical behaviour, theft, abuse of company property, rules, time, and sick leave                                              | 20                    |
| KT0505                         | Conflicts of interest, including primary and secondary interests the impact on individuals and organisations and the link to corruption | 20                    |
| KT0506                         | The need for ethical behaviour and the impact on consequences of lapses in unethical behaviour                                          | 20                    |



(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                             | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0501  | Define and describe the concepts, issues, and examples of ethical and unethical conduct.                    | 25                    |
| IAC0502  | Explain the impact of these factors on an employer and employee.                                            | 25                    |
| IAC0503  | Describe the impact of lapses in ethical behaviour on the organisation and individuals in the organisation. | 25                    |
| IAC0504  | Describe the processes which employer organisations use to support ethical conduct in the workplace.        | 25                    |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT06 CURRENT TRENDS INFLUENCING WORK 10% |                                        |                       |
|------------------------------------------------|----------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                             | TOPIC ELEMENT TITLE                    | % OF TIME TO BE SPENT |
| KT0601                                         | Employment equity                      | 10                    |
| KT0602                                         | Broad-Based Black Economic Empowerment | 10                    |
| KT0603                                         | Sustainability                         | 20                    |
| KT0604                                         | Diversity                              | 10                    |
| KT0605                                         | Work-life balance                      | 20                    |
| KT0606                                         | Working smart                          | 10                    |
| KT0607                                         | Online working                         | 20                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                   | % OF TIME TO BE SPENT |
|----------|-------------------------------------------------------------------|-----------------------|
| IAC0601  | Explain the current trends affecting organisations and employees. | 50                    |
| IAC0602  | Discuss the impact of these factors on an employer and employee.  | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT07 FUNDAMENTALS OF ORGANISATIONAL COMMUNICATION SKILLS 5% |                               |                       |
|-------------------------------------------------------------------|-------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                                | TOPIC ELEMENT TITLE           | % OF TIME TO BE SPENT |
| KT0701                                                            | Listening skills              | 20                    |
| KT0702                                                            | Basic communication processes | 10                    |
| KT0703                                                            | Barriers to communication     | 20                    |
| KT0704                                                            | Non-verbal communication      | 15                    |
| KT0705                                                            | Gender and communication      | 10                    |
| KT0706                                                            | Informal communication        | 15                    |
| KT0707                                                            | Social media influences       | 10                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                           | % OF TIME TO BE SPENT |
|----------|-----------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0701  | Explain the implications and theories of communication and listening to the workplace environment.        | 25                    |
| IAC0702  | Define the concept of barriers to effective communication and techniques used to overcome these barriers. | 25                    |
| IAC0703  | Explain verbal and nonverbal communication.                                                               | 25                    |
| IAC0704  | Explain the dos and don'ts of social media in a professional environment.                                 | 25                    |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT08 BASIC EMOTIONAL INTELLIGENCE 5 % |                           |                       |
|---------------------------------------------|---------------------------|-----------------------|
| TOPIC ELEMENT CODE                          | TOPIC ELEMENT TITLE       | % OF TIME TO BE SPENT |
| KT0801                                      | Concepts and definitions  | 20                    |
| KT0802                                      | Self-awareness            | 20                    |
| KT0803                                      | Interpersonal skills      | 15                    |
| KT0804                                      | Self-management           | 20                    |
| KT0805                                      | Relationships with others | 15                    |
| KT0806                                      | Empathy                   | 10                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                                                                                       | % OF TIME TO BE SPENT |
|----------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| IAC0801  | Explain the theoretical foundation of emotional intelligence and implications for interpersonal skills within a business environment. | 50                    |
| IAC0802  | Explain how the organisational environment impacts interpersonal relationships.                                                       | 50                    |

(c) Detailing each topic listed above into topic elements:

| KM-06-KT09 BASIC INTRODUCTION TO INFORMATION COMMUNICATION TECHNOLOGIES 10% |                                                                                                                              |                       |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| TOPIC ELEMENT CODE                                                          | TOPIC ELEMENT TITLE                                                                                                          | % OF TIME TO BE SPENT |
| KT0901                                                                      | Main components and functions of Information technology systems (input component, display, Processing, and memory component) | 30                    |
| KT0902                                                                      | Internet and internet of things                                                                                              | 20                    |
| KT0903                                                                      | Social media                                                                                                                 | 10                    |
| KT0904                                                                      | Uses and don'ts of social media                                                                                              | 10                    |
| KT0905                                                                      | Convergence of ICT mediums                                                                                                   | 30                    |

(d) Internal Assessment Criteria (IAC) and Weight

| IAC CODE | IAC DESCRIPTION                                                             | % OF TIME TO BE SPENT |
|----------|-----------------------------------------------------------------------------|-----------------------|
| IAC0901  | Describe the functions of different components of Information Technologies. | 40                    |
| IAC0902  | Describe the use of internet and implications of internet of things         | 30                    |
| IAC0903  | Explain the implication of Convergence for different ICT mediums            | 30                    |

### 3.6.2 Criteria for Accreditation

#### Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"><li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li><li>Facilities that meet the minimum requirements for the comfort of learners (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li><li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li><li>Tools and standards for internal assessment</li><li>Record-keeping systems to capture learner data and issue a statement of results.</li><li>Printed learner materials, assessment tools, stationery, flipchart and whiteboard materials, workplace policy samples, role-play and case study resources, health and hygiene consumables, printing supplies, and basic digital learning support materials.</li></ul> |
| <b>CONSUMABLES</b>                | <ul style="list-style-type: none"><li>None</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"><li>Facilitators must hold a relevant qualification at NQF Level 4 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li><li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li><li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li></ul> |
| <b>FACILITATOR/LEARNER RATIO</b>       | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

#### Legal Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"><li>CIPC registered entity</li><li>Valid Tax Clearance Certificate</li><li>Compliant and current health and safety audit report</li><li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li><li>Protection of Personal Information (POPI) policy</li></ul> |

#### Additional Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |
|-----------------------------------|
| None                              |

### 3.6.3 Exemptions

None

#### 4. Practical Skill Module (PM) Specifications:

| MODULE CODE         | MODULE TITLE                                                                         | NQF LEVEL | CREDITS | MODE OF DELIVERY |
|---------------------|--------------------------------------------------------------------------------------|-----------|---------|------------------|
| 900524-000-01-PM-01 | Use tools, measuring instruments, and equipment                                      | 3         | 7       | Face-to-face     |
| 900524-000-01-PM-02 | Plan and assist in the installation of renewable energy plant                        | 4         | 8       | Face-to-face     |
| 900524-000-01-PM-03 | Mitigate and respond to hazards associated with Renewable Energy system installation | 3         | 8       | Face-to-face     |
| 900524-000-01-PM-04 | Conduct routine maintenance of equipment and store equipment and material            | 4         | 6       | Face-to-face     |

#### Detailing Practical Module (PM) contents

##### 4.1 900524-000-01-PM-01, Use tools, measuring instruments and equipment, NQF Level 3, Credits 7

| MODULE CODE         | MODULE TITLE                                    | NQF LEVEL | CREDITS | MODE OF DELIVERY |
|---------------------|-------------------------------------------------|-----------|---------|------------------|
| 900524-000-01-PM-01 | Use tools, measuring instruments, and equipment | 3         | 7       | Face-to-face     |

##### (a) Purpose of the Practical Skills Module:

The focus of the learning in this module is on providing the learner with an opportunity to demonstrate an understanding of the use of tools, measuring instruments, and equipment.

The learner will be required to perform the activities listed below:

##### (b) List of Practical Skill Activities:

| PRACTICAL SKILL CODE | ACTIVITY TITLE                                       |
|----------------------|------------------------------------------------------|
| PM-01-PS01           | Select, use, and care for engineering hand tools.    |
| PM-01-PS02           | Select, use, and care for power tools and equipment. |
| PM-01-PS03           | Perform marking-off activities                       |
| PM-01-PS04           | Select, use, and care for mechanical instruments.    |
| PM-01-PS05           | Rivet materials together                             |
| PM-01-PS06           | Perform soft soldering activities.                   |
| PM-01-PS07           | Lift loads                                           |

##### (c) Scope of each Practical Skill Activity:

|                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PM-01-PS01 SELECT, USE, AND CARE FOR ENGINEERING HAND TOOLS                                                                                                                                                                                                                                     |
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                  |
| Given work instructions, checklists, work area, drawings, documents, templates, forms, safety and quality principles, hand saws, hammers, screwdrivers, sockets, spanners, chassis punches, side cutters, pliers, wire strippers, drill bits, measuring and marking off tools, fastening tools, |

| equipment standard operating procedures and statutory requirements, the learner must be able to |                                                                                                                  |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                   | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>                                                                         |
| PA0101                                                                                          | Select engineering hand tools and equipment for serviceability.                                                  |
| PA0102                                                                                          | Use engineering hand tools and equipment.                                                                        |
| PA0103                                                                                          | Respond appropriately to potential hazards and risks related to the use of engineering hand tools and equipment. |

(d) Applied Knowledge that underpins the Practical Skill Activity

| <b>APPLIED KNOWLEDGE CODE</b> | <b>APPLIED KNOWLEDGE</b>                                                                              |
|-------------------------------|-------------------------------------------------------------------------------------------------------|
| AK0101                        | Workshop procedures including housekeeping practices according to statutory requirements              |
| AK0102                        | Techniques for maintaining hand tools and equipment                                                   |
| AK0103                        | Techniques for using tools and equipment                                                              |
| AK0104                        | Practices related to quality, health, safety, and protection of the environment when using hand tools |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| <b>IAC CODE</b> | <b>IAC DESCRIPTION</b>                                                                                                                                                                               |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IAC0101         | The correct application of tools is used for cutting steel, copper, aluminium, plastics, and synthetic materials as per manufacturers' specifications.                                               |
| IAC0102         | The correct application of tools is used to loosen or fasten a range of different types and sizes of nuts or bolts and different types and sizes of screws as per the manufacturer's specifications. |
| IAC0103         | The correct application of tools is used to strip or cut a range of different types and sizes of electrical wire as per the manufacturer's specifications.                                           |
| IAC0104         | Sharp edges on chisel/punch-type tool heads with a "mushroom effect" are removed to ensure that they can be used safely; then tips with burs or chips are sharpened for effective use.               |
| IAC0105         | Flat screwdriver tips with burs or chips are filed and prepared to the manufacturer's specification ensuring that they are serviceable.                                                              |
| IAC0106         | The adjusting/moving mechanisms of shifting spanners, gas pump pliers, vice grip, dividers, and Stilton wrenches are lubricated to ensure free movement and serviceability.                          |
| IAC0107         | Engineering files cutting edge are cleaned using a wire brush to ensure serviceability.                                                                                                              |
| IAC0108         | Scribers, dividers, and centre punches are sharpened to ensure serviceability.                                                                                                                       |

(c) Scope of each Practical Skill Activity:

| <b>PM-01-PS02 SELECT, USE, AND CARE FOR POWER TOOLS AND EQUIPMENT</b>                                                                                                                                                           |                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                  |                                                                   |
| Given work instructions, work area, documents, templates, drilling machines (portable and pedestal), grinders, and saws, bench grinder, standard operating procedures and, statutory requirements, the learner must be able to: |                                                                   |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                                                                                   | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>                          |
| PA0201                                                                                                                                                                                                                          | Select a power tool or equipment for specific job requirements.   |
| PA0202                                                                                                                                                                                                                          | Use fixed power or equipment tools.                               |
| PA0203                                                                                                                                                                                                                          | Use portable power or equipment tools.                            |
| PA0204                                                                                                                                                                                                                          | Care for and store power tools or equipment and their accessories |

|        |                                                                                         |
|--------|-----------------------------------------------------------------------------------------|
| PA0205 | Respond appropriately to potential hazards and risks related to the use of power tools. |
|--------|-----------------------------------------------------------------------------------------|

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                                                                                      |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| AK0201                 | Workshop procedures including housekeeping practices according to statutory requirements                                               |
| AK0202                 | Safety practices relating to the use of power tools including the use of personal protective equipment, electrical and fire protection |
| AK0203                 | Types and uses of fixed and portable power tools and equipment                                                                         |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                                                                  |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| IAC0201  | Power tools and equipment are selected according to the task requirements.                                                                       |
| IAC0202  | Pre-operational check is carried out in terms of safety requirements and function.                                                               |
| IAC0203  | Hazards associated with the use of power tools or equipment are recognized and necessary precautions are taken according to workshop procedures. |
| IAC0204  | Faulty and unsafe tools or equipment are identified and reported by standard operating procedures.                                               |
| IAC0205  | Personal safety equipment is selected and used according to tool or equipment requirements.                                                      |
| IAC0206  | Fixed and portable power tools are selected and set up according to job requirements.                                                            |
| IAC0207  | All guards and securing mechanisms are effectively utilised in terms of job requirements.                                                        |
| IAC0208  | Fixed and portable power tools and equipment are used safely and according to the manufacturer's specifications.                                 |
| IAC0209  | Power tools and equipment are inspected, cleaned, and lubricated after use according to workshop practices and/or manufacturers' specifications. |
| IAC0210  | Loose items are secured, and minor defects are repaired by workshop procedures.                                                                  |
| IAC0211  | Portable power tools, equipment, and accessories are stored by workshop procedures.                                                              |

(c) Scope of each Practical Skill Activity:

| <b>PM-01-PS03 PERFORM MARKING-OFF ACTIVITIES</b>                                                                                                                |                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                  |                                                                                                                             |
| Given appropriate tools and equipment, dimensions, raw materials, instructions, templates, and assignments to perform marking-off, the learner must be able to: |                                                                                                                             |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                          | PRACTICAL SKILL ACTIVITY ELEMENTS                                                                                           |
| PA0301                                                                                                                                                          | Plan and prepare for the marking-off of materials using templates.                                                          |
| PA0302                                                                                                                                                          | Select marking-off tools appropriate for different materials and sizes to prevent negative influences on the final product. |
| PA0303                                                                                                                                                          | Interpret job instructions and engineering drawings.                                                                        |
| PA0304                                                                                                                                                          | Perform marking-off using drawings, tools, and equipment according to the job specification.                                |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                                                                                                                                                                                                                             |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AK0301                 | Method of checking and evaluating marking-off dimensions from working drawings (including methods of transferring dimensions)                                                                                                                                                 |
| AK0302                 | Tests for strength, flexibility, and defects in raw materials                                                                                                                                                                                                                 |
| AK0303                 | Marking-off tools and equipment include to centre punch and hammer, V-shaped block, marking-off scribe, steel rule, steel compass, block and flat table, height gauge, dividing heads, marking agents (pens, paint, chalk, marking blue), rotary tables, trammels, parallels. |
| AK0304                 | Marking off templates                                                                                                                                                                                                                                                         |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                               |
|----------|-----------------------------------------------------------------------------------------------|
| IAC0301  | Preparations for marking-off are made to ensure smooth operation.                             |
| IAC0302  | Check and evaluate marking-off dimensions from working drawings.                              |
| IAC0303  | Check and test raw materials to be marked off defects.                                        |
| IAC0304  | Convert scales from working drawings using various suitable methods.                          |
| IAC0305  | The sequence of activities for the marking-off process is planned to ensure a smooth process. |
| IAC0306  | Templates are used on material as per standard procedure, to maintain accuracy.               |
| IAC0307  | Marking off is concluded to specifications and checked for quality.                           |
| IAC0308  | Work shows consideration for quality.                                                         |

(c) Scope of each Practical Skill Activity:

| PM-01-PS04 SELECT, USE, AND CARE FOR MECHANICAL INSTRUMENTS                                                                                                                                                                                                                                                             |                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:                                                                                                                                                                                                                                                                                 |                                                             |
| Given work instructions, work area, and documents, including but not limited to inclinometers, tape measures, digital and laser distance meters, thermometers, steel rulers, engineer's squares, Vernier callipers, torque wrench standard operating procedures, and statutory requirements the learner must be able to |                                                             |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                                                                                                                                                                                  | PRACTICAL SKILL ACTIVITY ELEMENTS                           |
| PA0401                                                                                                                                                                                                                                                                                                                  | Identify and select mechanical measuring instruments.       |
| PA0402                                                                                                                                                                                                                                                                                                                  | Use and interpret mechanical measuring instrument readings. |
| PA0403                                                                                                                                                                                                                                                                                                                  | Care for mechanical measuring instruments.                  |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                      |
|------------------------|------------------------------------------------------------------------|
| AK0401                 | Handling procedures related to measuring instrument                    |
| AK0402                 | Basic operating principles of electrical measuring instruments         |
| AK0403                 | Types, applications, and Functions of electrical measuring instruments |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------|
| IAC0401  | Job instructions are interpreted correctly, and the sequence of operations is determined.             |
| IAC0402  | Unsafe and faulty measuring instruments are identified visually and marked for repair or replacement. |



|         |                                                                                                                               |
|---------|-------------------------------------------------------------------------------------------------------------------------------|
| IAC0403 | Mechanical measuring instruments are checked for correct operation and functionality.                                         |
| IAC0404 | Mechanical measuring instruments are set up and used according to their specifications.                                       |
| IAC0405 | Mechanical measuring instruments are read correctly.                                                                          |
| IAC0406 | Results are recorded on appropriate documentation.                                                                            |
| IAC0407 | Results are accurately interpreted against the specifications of the job requirements.                                        |
| IAC0408 | Mechanical measuring instruments are placed and stored according to the manufacturer's specifications and workshop standards. |

(c) Scope of each Practical Skill Activity:

| PM-01-PS05 RIVET MATERIALS TOGETHER                                                                                     |                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                          |                                                                                    |
| Given two sheets of metal or plastic, a drilling machine, pop rivet, rivets, washers, etc. the learner must be able to: |                                                                                    |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                           | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>                                           |
| PA0501                                                                                                                  | Make holes using the drilling machine and appropriate measuring and marking tools. |
| PA0502                                                                                                                  | Rivet the sheets together.                                                         |

(d) Applied Knowledge that underpins the Practical Skill Activity

| <b>APPLIED KNOWLEDGE CODE</b> | <b>APPLIED KNOWLEDGE</b>                                                                                   |
|-------------------------------|------------------------------------------------------------------------------------------------------------|
| AK0501                        | Equipment for riveting: riveting machine, drilling machine, washers, rivets (standard, countersunk, blind) |
| AK0502                        | Technique for riveting                                                                                     |
| AK0503                        | Safety Requirements                                                                                        |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| <b>IAC CODE</b> | <b>IAC DESCRIPTION</b>                                                |
|-----------------|-----------------------------------------------------------------------|
| IAC0501         | Materials to be riveted together are marked where holes will be made. |
| IAC0502         | The drilling machine is used correctly to make holes.                 |
| IAC0503         | Appropriate rivet and washer sizes are chosen.                        |
| IAC0504         | Pop rivet is used correctly to complete the task.                     |
| IAC0505         | Safety requirements are adhered to                                    |

(c) Scope of each Practical Skill Activity:

| PM-01-PS06 PERFORM SOFT SOLDERING ACTIVITIES                                                                                                                                                                                                                                                                                                                                               |                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                                                                                                             |                                                      |
| Given work instructions, work area, checklists, soldering irons; insulation strippers (thermal type insulation strippers and mechanical wire strippers); wire bending tools; solder; flux; basic soldering connections (turret, bifurcated, hook, surface mounts, cups), solder sucker, accessories, standard operating procedures and statutory requirements the learner must be able to: |                                                      |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                                                                                                                                                                                                                                              | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>             |
| PA0601                                                                                                                                                                                                                                                                                                                                                                                     | Solder various wire joints.                          |
| PA0602                                                                                                                                                                                                                                                                                                                                                                                     | Solder components on a PC board Vero board or joints |
| PA0603                                                                                                                                                                                                                                                                                                                                                                                     | De-solder components                                 |



(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                                                              |
|------------------------|----------------------------------------------------------------------------------------------------------------|
| AK0601                 | Soldering techniques and applications                                                                          |
| AK0602                 | Safety practices relating to the use of soldering equipment including the use of personal protective equipment |
| AK0603                 | De-soldering methods                                                                                           |
| AK0604                 | Handling and storage of soldering equipment and accessories                                                    |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                       |
|----------|-------------------------------------------------------------------------------------------------------|
| IAC0601  | The work area is inspected for safe working conditions and corrective action is taken where required. |
| IAC0602  | Applicable soldering equipment is selected as required by the task.                                   |
| IAC0603  | Soldering material is correctly selected as required by the task.                                     |
| IAC0604  | All connections are cleaned of any dirt or oxidation.                                                 |
| IAC0605  | Tinning of wire and connections is done according to the manufacturer's specifications.               |
| IAC0606  | Connections are soldered according to specifications and techniques.                                  |
| IAC0607  | Components are laid out on the circuit board according to the circuit diagram.                        |
| IAC0608  | Components are soldered according to soldering techniques.                                            |

(c) Scope of each Practical Skill Activity:

| PM-01-PS07 LIFT LOADS                                                                   |                                                                  |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                          |                                                                  |
| Given appropriate lifting tools equipment and assignments, the learner must be able to: |                                                                  |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                  | PRACTICAL SKILL ACTIVITY ELEMENTS                                |
| PA0701                                                                                  | Assess the nature of the lifting task and the associated risks.  |
| PA0702                                                                                  | Plan the lifting process (including making simple calculations)  |
| PA0703                                                                                  | Identify and select lifting equipment by load requirements.      |
| PA0704                                                                                  | Inspect the lifting equipment for safety and defects.            |
| PA0705                                                                                  | Sling loads by load requirements and worksite procedures         |
| PA0706                                                                                  | Use applicable communication methods during slinging operations. |
| PA0707                                                                                  | Lift, convey, and place/stack loads safely.                      |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                                                                                                                                                                                                                                                 |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AK0701                 | Lifting equipment (chain slings, rope slings, steel wire slings, synthetic web slings, shackles, eyebolts, guide ropes, plate grabs, chain blocks, rope tackles/rope blocks jacks, come-along, small floor cranes, hoists [tirfor, coffin], lifting brackets, fasteners, colour codes of slings). |
| AK0702                 | Equipment defects (include wear, corrosion, stretched links, deterioration of splices, cracks, nicks, and broken strands, contamination through oil and paint [synthetic slings])                                                                                                                 |
| AK0703                 | Load capacity of lifting equipment and the reason for not exceeding it.                                                                                                                                                                                                                           |
| AK0704                 | Communication methods may include the use of two-way radios, standard hand signals, and warning devices such as hooters and whistles.                                                                                                                                                             |
| AK0705                 | Lifting techniques                                                                                                                                                                                                                                                                                |

|        |                                                                           |
|--------|---------------------------------------------------------------------------|
| AK0706 | Safety requirements                                                       |
| AK0707 | Caring and storage procedures                                             |
| AK0708 | Load capacity for this practical skill not to exceed 2t (two metric tons) |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                 |
|----------|---------------------------------------------------------------------------------|
| IAC0701  | The task is assessed, and an appropriate lifting technique is chosen.           |
| IAC0702  | Risks are assessed and mitigated.                                               |
| IAC0703  | The lifting task is planned by the task.                                        |
| IAC0704  | Lifting equipment is selected and checked and its lifting capacity is noted.    |
| IAC0705  | The lifting task is completed keeping in consideration all safety requirements. |
| IAC0706  | Equipment is cleaned, lubricated, and stored according to procedures.           |

#### 4.1.2. Criteria for Accreditation

##### Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for learners' comfort (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools equipment: soldering irons; insulation strippers (thermal type insulation strippers and mechanical wire strippers); wire bending tools; solder; flux; basic soldering connections (turret, bifurcated, hook, surface mounts, cups), solder sucker, inclinometers, tape measures, digital and laser distance meters, thermometers, steel rulers, engineer's squares, Vernier callipers, torque wrench, 5mm Industrial Metal Drill Bit (10 Pack), MULTI-SHARP Drill Bit Sharpener, Eclipse 300mm Shatterproof Hacksaw Blade 24TPI, 9V Zinc-Carbon Battery, Carbon Film Resistor ¼W 300Ω, Carbon Film Resistor ¼W 300Ω, 100X5MM ASSTD LEDS-5 COLORS, Miniature Toggle Switch, Red Panel Wire Solid 0.5mm<sup>2</sup> 100M, Black Panel Wire Solid 0.5mm<sup>2</sup> 100M, 0.90mm Solder Wire 500g per Roll, Vero Board - 50 x 100mm, Flat Bar – 100mm x 6mm – Mild Steel, SPANJAARD Engineering Marking Blue Aerosol, MAC AFRIC Aluminium Rivets Packets of 100 4.8 X 10 mm, Abrasive Handgel Cleaner Dispenser, SPANJAARD Engineering Marking Blue Aerosol, Conti Suit Econo - Royal/Blue, Dot Argon Safety Boot, Safety Glasses, Safety Gloves, First Aid Tool, Working at heights equipment.</li> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> <li>All assessment instruments to cover the related topics.</li> <li>Tools and standards for internal assessment</li> <li>Printed job cards, assessment sheets and stationery.</li> </ul> |
| <b>CONSUMABLES</b>                | Electrical cables (AC/DC), MC4 connectors, cable lugs, insulation tape, heat shrink tubing, fuses and MCBs, solder and flux, nuts,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|  |                                                                                                                                                                                             |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | bolts, rivets, mounting brackets, cable ties, marking materials, PPE consumables, cleaning materials, demonstration electrical and mechanical components, and general workshop consumables. |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>Facilitators must hold a relevant qualification at NQF Level 5 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> <li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |
| <b>FACILITATOR/LEARNER RATIO</b>       | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### Legal Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>CIPC registered entity</li> <li>Valid Tax Clearance Certificate</li> <li>Compliant and current health and safety audit report</li> <li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>Protection of Personal Information (POPI) policy</li> </ul> |

#### Additional Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |
|-----------------------------------|
| None                              |

#### 4.1.3 Exemptions

None

#### 4.2 900524-000-01-PM-02, Plan and assist in the installation of the renewable energy plant, NQF Level 4, Credits 8

| MODULE CODE         | MODULE TITLE                                                      | NQF LEVEL | CREDITS | MODE OF DELIVERY |
|---------------------|-------------------------------------------------------------------|-----------|---------|------------------|
| 900524-000-01-PM-02 | Plan and assist in the installation of the renewable energy plant | 4         | 8       | Face-to-face     |

##### (a) Purpose of the Practical Skills Module:

The focus of the learning in this module is on providing the learner with an opportunity to demonstrate an understanding of planning and assisting in the installation of the renewable energy plant.

##### (b) List of Practical Skill Activities:

| PRACTICAL SKILL CODE | ACTIVITY TITLE                                                                         |
|----------------------|----------------------------------------------------------------------------------------|
| PM-02-PS01           | Participate in planning and preparing for the installation of a Renewable power plant. |
| PM-02-PS02           | Conduct site preparation                                                               |
| PM-02-PS03           | Prepare material for installation.                                                     |

|            |                                                                                          |
|------------|------------------------------------------------------------------------------------------|
| PM-02-PS04 | Assist with the basic installation of (assembly) components of the energy systems.       |
| PM-02-PS05 | Monitor the quality of installation of components, wiring, and connections to standards. |

(c) Scope of each Practical Skill Activity:

|                                                                                                                                                                                                                                                                                                                                                       |                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| PM-02-PS01 PARTICIPATE IN PLANNING AND PREPARING FOR THE INSTALLATION OF A RENEWABLE POWER PLANT                                                                                                                                                                                                                                                      |                                                 |
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                                                                        |                                                 |
| Given an assignment, materials, tools, measuring tools, lifting equipment, equipment, PPE, planning policy and procedures, desk and tables, computer, access to the internet, mechanical components for renewable energy production systems, electrical wiring, soldering equipment and riveting equipment, consumables. The learner must be able to: |                                                 |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                                                                                                                                                                                                         | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>        |
| PA0101                                                                                                                                                                                                                                                                                                                                                | Compile the material list for job requirements. |
| PA0102                                                                                                                                                                                                                                                                                                                                                | Compile the Tool list for the work.             |

(d) Applied Knowledge that underpins the Practical Skill Activity

|                               |                                             |
|-------------------------------|---------------------------------------------|
| <b>APPLIED KNOWLEDGE CODE</b> | <b>APPLIED KNOWLEDGE</b>                    |
| AK0101                        | Health and safety standards                 |
| AK0102                        | Uses of different tools and equipment       |
| AK0103                        | Uses of lifting equipment                   |
| AK0104                        | Local government by-laws                    |
| AK0105                        | Uses of emergency warning symbols and signs |
| AK0106                        | Working at Heights practices                |
| AK0107                        | Uses of different PPEs                      |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

|                 |                                                        |
|-----------------|--------------------------------------------------------|
| <b>IAC CODE</b> | <b>IAC DESCRIPTION</b>                                 |
| IAC0101         | Material list is compiled to job requirements.         |
| IAC0102         | Tools and equipment list compiled to job requirements. |

(c) Scope of each Practical Skill Activity:

|                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| PM-02-PS02 CONDUCT SITE PREPARATION                                                                                                                                                                                                                                                                                                                   |                                                                         |
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                                                                        |                                                                         |
| Given an assignment, materials, tools, measuring tools, lifting equipment, equipment, PPE, planning policy and procedures, desk and tables, computer, access to the internet, mechanical components for renewable energy production systems, electrical wiring, soldering equipment and riveting equipment, consumables. The learner must be able to: |                                                                         |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                                                                                                                                                                                                         | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>                                |
| PA0201                                                                                                                                                                                                                                                                                                                                                | Coordinate clearance and level of the site.                             |
| PA0202                                                                                                                                                                                                                                                                                                                                                | Assess and determine access routes.                                     |
| PA0203                                                                                                                                                                                                                                                                                                                                                | Plan and prepare for limited access to the site.                        |
| PA0204                                                                                                                                                                                                                                                                                                                                                | Install signage (health safety, layout of the area).                    |
| PA0205                                                                                                                                                                                                                                                                                                                                                | Prepare the site for access control compliance with legal requirements. |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                           |
|------------------------|---------------------------------------------|
| AK0201                 | Health and safety standards                 |
| AK0202                 | Uses of different tools and equipment       |
| AK0203                 | Uses of lifting equipment                   |
| AK0204                 | Local government by-laws                    |
| AK0205                 | Uses of emergency warning symbols and signs |
| AK0206                 | Working at Heights practices                |
| AK0207                 | Uses of different PPEs                      |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                        |
|----------|----------------------------------------------------------------------------------------|
| IAC0201  | Site clearance and levelling are conducted to the work specifications.                 |
| IAC0202  | Access routes are determined to provide easy access and limited impact on the traffic. |
| IAC0203  | Access control is planned in accordance with procedural and legal requirements.        |

(c) Scope of each Practical Skill Activity:

| PM-02-PS03 PREPARE MATERIAL FOR INSTALLATION                                                                                                                                                                                                                                                                                                          |                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                                                                        |                                                                 |
| Given an assignment, materials, tools, measuring tools, lifting equipment, equipment, PPE, planning policy and procedures, desk and tables, computer, access to the internet, mechanical components for renewable energy production systems, electrical wiring, soldering equipment and riveting equipment, consumables. The learner must be able to: |                                                                 |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                                                                                                                                                                                                                | PRACTICAL SKILL ACTIVITY ELEMENTS                               |
| PA0301                                                                                                                                                                                                                                                                                                                                                | Calculate and measure the areas for installation of components. |
| PA0302                                                                                                                                                                                                                                                                                                                                                | Prepare and interpret the design for site requirements.         |
| PA0303                                                                                                                                                                                                                                                                                                                                                | Collect prepared material for the installation site.            |
| PA0304                                                                                                                                                                                                                                                                                                                                                | Prepare the tool list relevant to the commissioned work.        |
| PA0305                                                                                                                                                                                                                                                                                                                                                | Maintain a secure work environment.                             |
| PA0306                                                                                                                                                                                                                                                                                                                                                | Optimise the efficient use of the material.                     |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                        |
|------------------------|------------------------------------------|
| AK0301                 | Applied health and safety practices      |
| AK0302                 | Application of quality control standards |
| AK0303                 | Uses of measurement tools and techniques |
| AK0304                 | Good workmanship practices and standards |
| AK0305                 | Uses of PPEs                             |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                               |
|----------|-----------------------------------------------------------------------------------------------|
| IAC0301  | The installation design is interpreted for design site requirements.                          |
| IAC0302  | Material, tools, and equipment are prepared and transported to the installation site.         |
| IAC0303  | The work environment is secured to protect the employees, the public, and the infrastructure. |
| IAC0304  | Material is used efficiently to job requirements.                                             |

(c) Scope of each Practical Skill Activity:

| PM-02-PS04 ASSIST WITH THE BASIC INSTALLATION OF (ASSEMBLY) COMPONENTS OF THE ENERGY SYSTEMS                                                                                                                                                                                                                                                          |                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                                                                        |                                                         |
| Given an assignment, materials, tools, measuring tools, lifting equipment, equipment, PPE, planning policy and procedures, desk and tables, computer, access to the internet, mechanical components for renewable energy production systems, electrical wiring, soldering equipment and riveting equipment, consumables. The learner must be able to: |                                                         |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                                                                                                                                                                                                                | PRACTICAL SKILL ACTIVITY ELEMENTS                       |
| PA0401                                                                                                                                                                                                                                                                                                                                                | Transport material to the work site                     |
| PA0402                                                                                                                                                                                                                                                                                                                                                | Select and prepare tools and equipment for use.         |
| PA0403                                                                                                                                                                                                                                                                                                                                                | Hold material/ component to ensure proper installation. |
| PA0404                                                                                                                                                                                                                                                                                                                                                | Bolt nuts into place to standard requirements           |
| PA0405                                                                                                                                                                                                                                                                                                                                                | Soldering parts together to specifications              |
| PA0405                                                                                                                                                                                                                                                                                                                                                | Rivet parts together to specification                   |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE           |
|------------------------|-----------------------------|
| AK0401                 | Problem-solving techniques  |
| AK0402                 | Measurement techniques      |
| AK0403                 | Soldering techniques        |
| AK0404                 | Housekeeping practices      |
| AK0405                 | Health and safety practices |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                             |
|----------|-----------------------------------------------------------------------------|
| IAC0401  | Tools and equipment are inspected and prepared for optimal use.             |
| IAC0402  | Components and parts are held in position to enable effective installation. |
| IAC0403  | Nuts are bolted into position to quality and standard requirements.         |
| IAC0404  | Parts are soldered and riveted together with installation specifications.   |

(c) Scope of each Practical Skill Activity:

| PM-02-PS05 MONITOR QUALITY OF INSTALLATION OF COMPONENTS, WIRING, AND CONNECTIONS TO STANDARDS                                                                                                                                                                                                                                                        |                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                                                                        |                                                    |
| Given an assignment, materials, tools, measuring tools, lifting equipment, equipment, PPE, planning policy and procedures, desk and tables, computer, access to the internet, mechanical components for renewable energy production systems, electrical wiring, soldering equipment and riveting equipment, consumables. The learner must be able to: |                                                    |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                                                                                                                                                                                                                | PRACTICAL SKILL ACTIVITY ELEMENTS                  |
| PA0501                                                                                                                                                                                                                                                                                                                                                | Assist with inspection of installation work.       |
| PA0502                                                                                                                                                                                                                                                                                                                                                | Assist with inspection of quality workmanship.     |
| PA0503                                                                                                                                                                                                                                                                                                                                                | Compile and report on the quality of installation. |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE             |
|------------------------|-------------------------------|
| AK0501                 | Wiring techniques and methods |
| AK0502                 | Aesthetic appeal of work      |



|        |                             |
|--------|-----------------------------|
| AK0503 | Professional workmanship    |
| AK0504 | Health and safety practices |
| AK0505 | Uses of Connectors          |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                         |
|----------|-------------------------------------------------------------------------|
| IAC0501  | Installations are inspected for quality and workmanship standards.      |
| IAC0502  | The installation report is compiled and submitted to work requirements. |

#### 4.2.2. Criteria for Accreditation

##### Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for learners' comfort (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools equipment: soldering irons; insulation strippers (thermal type insulation strippers and mechanical wire strippers); wire bending tools; solder; flux; basic soldering connections (turret, bifurcated, hook, surface mounts, cups), solder sucker, inclinometers, tape measures, digital and laser distance meters, thermometers, steel rulers, engineer's squares, Vernier callipers, torque wrench, 5mm Industrial Metal Drill Bit (10 Pack), MULTI-SHARP Drill Bit Sharpener, Eclipse 300mm Shatterproof Hacksaw Blade 24TPI, 9V Zinc-Carbon Battery, Carbon Film Resistor ¼W 300Ω, Carbon Film Resistor ¼W 300Ω, 100X5MM ASSTD LEDS-5 COLORS, Miniature Toggle Switch, Red Panel Wire Solid 0.5mm<sup>2</sup> 100M, Black Panel Wire Solid 0.5mm<sup>2</sup> 100M, 0.90mm Solder Wire 500g per Roll, Vero Board - 50 x 100mm, Flat Bar – 100mm x 6mm – Mild Steel, SPANJAARD Engineering Marking Blue Aerosol, MAC AFRIC Aluminium Rivets Packets of 100 4.8 X 10 mm, Abrasive Handgel Cleaner Dispenser, SPANJAARD Engineering Marking Blue Aerosol, Conti Suit Econo - Royal/Blue, Dot Argon Safety Boot, Safety Glasses, Safety Gloves, First Aid Tool, Working at heights equipment.</li> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> <li>All assessment instruments to cover the related topics.</li> <li>Tools and standards for internal assessment</li> </ul> |
| <b>CONSUMABLES</b>                | Electrical cables (AC/DC), MC4 connectors, cable lugs and ferrules, insulation and heat-shrink materials, junction box consumables, fuses and MCBs, solder and flux, mounting hardware (bolts, nuts, washers, brackets, clamps), sealing materials, cable ties, marking materials, PPE consumables, cleaning materials, and general renewable energy workshop consumables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QUALIFICATIONS & EXPERIENCE       | <ul style="list-style-type: none"><li>Facilitators must hold a relevant qualification at NQF Level 5 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li><li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li><li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li></ul> |
| FACILITATOR/LEARNER RATIO         | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

#### Legal Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| QUALIFICATIONS & EXPERIENCE       | <ul style="list-style-type: none"><li>CIPC registered entity</li><li>Valid Tax Clearance Certificate</li><li>Compliant and current health and safety audit report</li><li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li><li>Protection of Personal Information (POPI) policy</li></ul> |

#### Additional Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |
|-----------------------------------|
| None                              |

#### 4.2.3 Exemptions

None

#### 4.3 9000524-000-01-PM-03, Mitigate and respond to hazards associated with Renewable Energy system installation, NQF Level 3, Credits 8

| MODULE CODE         | MODULE TITLE                                                                         | NQF LEVEL | CREDITS | MODE OF DELIVERY |
|---------------------|--------------------------------------------------------------------------------------|-----------|---------|------------------|
| 900524-000-01-PM-03 | Mitigate and respond to hazards associated with Renewable Energy system installation | 3         | 8       | Face-to-face     |

##### (a) Purpose of the Practical Skills Module:

The focus of the learning in this module is on providing the learner with an opportunity to mitigate and respond to hazards associated with Renewable Energy system installation.



(b) List of Practical Skill Activities:

| PRACTICAL SKILL CODE | ACTIVITY TITLE                                   |
|----------------------|--------------------------------------------------|
| PM-03-PS01           | Perform first Aid                                |
| PM-03-PS02           | Perform firefighting                             |
| PM-03-PS03           | Inspect, record, and report on incidents.        |
| PM-03-PS04           | Interpret basic warning signs at the workplace.  |
| PM-03-PS05           | Conduct disposal of waste to national standards. |

(c) Scope of each Practical Skill Activity:

| PM-03-PS01 PERFORM FIRST AID                                                                                                                                                                                                                                                                                 |                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                                                               |                                                                                                                                       |
| Given a simulated emergency, a range of scenarios of possible „shocked“ and injured“ persons, appropriate protocols, relevant risk-based primary emergency care kit (including surgical gloves, mouthpieces/respiration devices), safety protocols, and statutory requirements, the learner must be able to: |                                                                                                                                       |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                                                                                                                                                                       | PRACTICAL SKILL ACTIVITY ELEMENTS                                                                                                     |
| PA0101                                                                                                                                                                                                                                                                                                       | Assess the situation and implement triage (airways; breathing; circulation; internal and external injuries and/or medical conditions) |
| PA0102                                                                                                                                                                                                                                                                                                       | Activate emergency services                                                                                                           |
| PA0103                                                                                                                                                                                                                                                                                                       | Apply rescue breathing for problems caused by foreign bodies, strangulation, suffocation, and asphyxia.                               |
| PA0104                                                                                                                                                                                                                                                                                                       | Perform Cardio-Pulmonary Resuscitation (CPR) with and without the use of barrier ventilation devices.                                 |
| PA0105                                                                                                                                                                                                                                                                                                       | Control bleeding and use direct pressure/bandages or suitable materials.                                                              |
| PA0106                                                                                                                                                                                                                                                                                                       | Treat bites                                                                                                                           |
| PA0107                                                                                                                                                                                                                                                                                                       | Treat persons for shock (general shock, anaphylaxis, and electrical shock)                                                            |
| PA0108                                                                                                                                                                                                                                                                                                       | Prepare persons with neck and/or spinal injuries for transportation.                                                                  |
| PA0109                                                                                                                                                                                                                                                                                                       | Monitor and manage head injuries and levels of consciousness.                                                                         |
| PA0110                                                                                                                                                                                                                                                                                                       | Immobilise fractures, dislocations, and sprains in the position of most comfort to the affected person.                               |
| PA0111                                                                                                                                                                                                                                                                                                       | Treat wounds                                                                                                                          |
| PA0112                                                                                                                                                                                                                                                                                                       | Treat poisoned persons                                                                                                                |
| PA0113                                                                                                                                                                                                                                                                                                       | Treat persons with sunstroke.                                                                                                         |
| PA0114                                                                                                                                                                                                                                                                                                       | Treat persons suffering from dehydration.                                                                                             |
| PA0115                                                                                                                                                                                                                                                                                                       | Treat electrical burns                                                                                                                |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                                                                                                                                              |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AK0101                 | PPE must include surgical gloves, mouthpieces/respiration devices                                                                                                                              |
| AK0102                 | Precautionary procedures for the safe management of body fluid spills                                                                                                                          |
| AK0103                 | Golden hour concept and triage principles (airways; breathing; circulation; internal and external injuries and/or medical conditions)                                                          |
| AK0104                 | Types of wounds (abrasions, lacerations, punctures, embedded objects, gunshot wounds, hand and eye wounds, human/rodent/animal/ /insect/reptile bites and stings; fractures, electrical burns) |
| AK0105                 | Common and workplace accidental poisoning; overdose                                                                                                                                            |
| AK0106                 | Safety risks and specific workplace hazards                                                                                                                                                    |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                    |
|----------|----------------------------------------------------------------------------------------------------|
| IAC0101  | The content and purpose of content in primary emergency care kit are explained.                    |
| IAC0102  | Appropriate PPE is used correctly.                                                                 |
| IAC0103  | Emergency scene evaluated and injured people prioritised for treatment using the triage principle. |
| IAC0104  | CPR and rescue breathing are demonstrated, and principles and procedures explained                 |
| IAC0105  | Treatment of wounds, electrical burns, and other injuries are explained                            |
| IAC0106  | The method of keeping First Aid records is explained.                                              |

(c) Scope of each Practical Skill Activity:

| <b>PM-03-PS02 PERFORM FIREFIGHTING</b>                                                                                                      |                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                              |                                                                                           |
| Given fire-fighting equipment, protective clothing, a simulated fire emergency, and a range of fire scenarios, the learner must be able to: |                                                                                           |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                      | PRACTICAL SKILL ACTIVITY ELEMENTS                                                         |
| PA0201                                                                                                                                      | Fire hazards associated with the installation and maintenance of PV systems are assessed. |
| PA0202                                                                                                                                      | Hazards that can cause or aggravate the situation are isolated.                           |
| PA0203                                                                                                                                      | Fire-fighting techniques and procedures are applied.                                      |
| PA0204                                                                                                                                      | Basic fire-fighting equipment is operated.                                                |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                                                                                                                                                                                                                                                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AK0201                 | Different types of fire including chemical fire, wood, paper, plastic fire, electrical fire, and appropriate fire-fighting techniques and procedures to extinguish it                                                                                                                                    |
| AK0202                 | Fire prevention techniques                                                                                                                                                                                                                                                                               |
| AK0203                 | Protocols for assessing a fire and its causes                                                                                                                                                                                                                                                            |
| AK0204                 | Materials that can be used to protect oneself against fire in an emergency                                                                                                                                                                                                                               |
| AK0205                 | Purpose and functions of protection equipment including Compressed Air Breathing Apparatus (CABA), airlines, Distress Signal Registers (DSU), and closed-circuit breathing apparatus.                                                                                                                    |
| AK0206                 | Purpose, function, and usage of firefighting equipment including branches, hoses, hydrants, extinguishers, monitors, permanent extinguishing systems, dry powder extinguishers, CO2 extinguishers, water extinguishers, chemical extinguishers, fixed hose reels, and ancillary extinguishing equipment. |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                                                                  |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| IAC0201  | Hazards that may start or aggravate a fire are identified and firefighting techniques for the specific type of fire are explained.               |
| IAC0202  | A small fire is extinguished using the appropriate fire-fighting techniques and the fire-fighting equipment is operated according to procedures. |

|         |                                                              |
|---------|--------------------------------------------------------------|
| IAC0203 | Fire-fighting equipment is operated according to procedures. |
|---------|--------------------------------------------------------------|

(c) Scope of each Practical Skill Activity:

|                                                                                                                                                                     |                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| PM-03-PS03 INSPECT, RECORD AND REPORT ON INCIDENTS                                                                                                                  |                                                                                   |
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                      |                                                                                   |
| Given an assignment, work environment for renewable energy plant, reporting templates and forms, computer, and access to the internet. The learner must be able to: |                                                                                   |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                       | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>                                          |
| PA0301                                                                                                                                                              | Inspect the site for hazards and risks.                                           |
| PA0302                                                                                                                                                              | Inspect the site for compliance with environmental health and safety legislation. |
| PA0303                                                                                                                                                              | Record details of incidents in the appropriate log                                |
| PA0304                                                                                                                                                              | Monitor risk and hazard to update the mitigation measures.                        |
| PA0305                                                                                                                                                              | Compile and submit incidence reports.                                             |

(d) Applied Knowledge that underpins the Practical Skill Activity

|                               |                                                      |
|-------------------------------|------------------------------------------------------|
| <b>APPLIED KNOWLEDGE CODE</b> | <b>APPLIED KNOWLEDGE</b>                             |
| AK0301                        | Incident reporting procedures                        |
| AK0302                        | Hazards and risk management procedures               |
| AK0303                        | Waste management processes                           |
| AK0304                        | Environmental conservation and protection procedures |
| AK0305                        | Health and safety practices                          |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

|                 |                                                                                          |
|-----------------|------------------------------------------------------------------------------------------|
| <b>IAC CODE</b> | <b>IAC DESCRIPTION</b>                                                                   |
| IAC0301         | The work site is inspected and monitored for hazards, risks, and environmental concerns. |
| IAC0302         | Incidents are recorded appropriately in a designated incident reporting log.             |
| IAC0303         | The mitigation plan is updated with new information to keep it current and relevant.     |

(c) Scope of each Practical Skill Activity:

|                                                                                                                                                                     |                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| PM-03-PS04 INTERPRET BASIC WARNING SIGNS AT THE WORKPLACE                                                                                                           |                                                                            |
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                      |                                                                            |
| Given an assignment, work environment for renewable energy plant, reporting templates and forms, computer, and access to the internet. The learner must be able to: |                                                                            |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                       | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>                                   |
| PA0401                                                                                                                                                              | Identify and interpret the meaning of warning signs and symbols.           |
| PA0402                                                                                                                                                              | Distinguish different types of warning signs.                              |
| PA0403                                                                                                                                                              | Apply safety measures required by signs and symbols.                       |
| PA0404                                                                                                                                                              | Communicate the risks associated with different warning signs and symbols. |
| PA0405                                                                                                                                                              | Monitor and report damage and missing safety signs and symbols.            |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                    |
|------------------------|------------------------------------------------------|
| AK0401                 | Types and uses of warning signs and colour coding    |
| AK0402                 | Types and uses of Warning Symbols                    |
| AK0403                 | Health and safety practices                          |
| AK0404                 | Hazards and risk management procedures               |
| AK0405                 | Waste management processes                           |
| AK0406                 | Environmental conservation and protection procedures |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                                           |
|----------|---------------------------------------------------------------------------------------------------------------------------|
| IAC0401  | Warning signs and symbols are identified and uses are described to standard application.                                  |
| IAC0402  | Risks are communicated to the requirements of different warning signs and symbols.                                        |
| IAC0403  | Damaged and missing signs and symbols are recorded, and reports are submitted in accordance with procedural requirements. |

(c) Scope of each Practical Skill Activity:

| PM-03-PS05 CONDUCT DISPOSAL OF WASTE TO NATIONAL STANDARDS                                                                                                          |                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                      |                                                                     |
| Given an assignment, work environment for renewable energy plant, reporting templates and forms, computer, and access to the internet. The learner must be able to: |                                                                     |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                              | PRACTICAL SKILL ACTIVITY ELEMENTS                                   |
| PA0501                                                                                                                                                              | Categorise waste based on properties                                |
| PA0502                                                                                                                                                              | Apply workplace procedures for separating different forms of waste. |
| PA0503                                                                                                                                                              | Use different waste bins for storage of waste.                      |
| PA0504                                                                                                                                                              | Use appropriate tools for safe waste handling.                      |
| PA0505                                                                                                                                                              | Coordinate waste disposal to legal and industry standards.          |
| PA0506                                                                                                                                                              | Record and maintain records of waste disposal activities.           |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                    |
|------------------------|------------------------------------------------------|
| AK0501                 | Types and uses of warning signs and colour coding    |
| AK0502                 | Types and uses of Warning Symbols                    |
| AK0503                 | Health and safety practices                          |
| AK0504                 | Hazards and risk management procedures               |
| AK0505                 | Waste management processes                           |
| AK0506                 | Environmental conservation and protection procedures |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                               |
|----------|-------------------------------------------------------------------------------|
| IAC0501  | Different forms of waste are categorised in accordance with their properties. |
| IAC0502  | Waste is separated into work requirements and industry standard practices.    |
| IAC0503  | Waste is handled using appropriate PPEs                                       |
| IAC0504  | Disposal is coordinated to workplace compliance and standard practice.        |

### 4.3.2. Criteria for Accreditation

#### Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for learners' comfort (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools equipment: soldering irons; insulation strippers (thermal type insulation strippers and mechanical wire strippers); wire bending tools; solder; flux; basic soldering connections (turret, bifurcated, hook, surface mounts, cups), solder sucker, inclinometers, tape measures, digital and laser distance meters, thermometers, steel rulers, engineer's squares, Vernier callipers, torque wrench, 5mm Industrial Metal Drill Bit (10 Pack), MULTI-SHARP Drill Bit Sharpener, Eclipse 300mm Shatterproof Hacksaw Blade 24TPI, 9V Zinc-Carbon Battery, Carbon Film Resistor ¼W 300Ω, Carbon Film Resistor ¼W 300Ω, 100X5MM ASSTD LEDS-5 COLORS, Miniature Toggle Switch, Red Panel Wire Solid 0.5mm<sup>2</sup> 100M, Black Panel Wire Solid 0.5mm<sup>2</sup> 100M, 0.90mm Solder Wire 500g per Roll, Vero Board - 50 x 100mm, Flat Bar – 100mm x 6mm – Mild Steel, SPANJAARD Engineering Marking Blue Aerosol, MAC AFRIC Aluminium Rivets Packets of 100 4.8 X 10 mm, Abrasive Handgel Cleaner Dispenser, SPANJAARD Engineering Marking Blue Aerosol, Conti Suit Econo - Royal/Blue, Dot Argon Safety Boot, Safety Glasses, Safety Gloves, First Aid Tool, Working at heights equipment.</li> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> <li>All assessment instruments to cover the related topics.</li> <li>Tools and standards for internal assessment</li> </ul> |
| <b>CONSUMABLES</b>                | Electrical cables (AC/DC), MC4 connectors, cable lugs and terminals, insulation tape and heat-shrink tubing, fuses and MCBs, mounting hardware (bolts, nuts, washers, rivets, brackets, clamps), sealing materials, cable ties, solder and flux, PPE consumables, safety tags and warning labels, marking materials, cleaning materials, and general renewable energy workshop consumables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

#### Human Resource Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP)      |                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b> | <ul style="list-style-type: none"> <li>Facilitators must hold a relevant qualification at NQF Level 5 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> </ul> |

|                                  |                                                                                                                                                                                                                                                    |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | <ul style="list-style-type: none"> <li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |
| <b>FACILITATOR/LEARNER RATIO</b> | 1:20                                                                                                                                                                                                                                               |

#### Legal Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b>   | <ul style="list-style-type: none"> <li>CIPC registered entity</li> <li>Valid Tax Clearance Certificate</li> <li>Compliant and current health and safety audit report</li> <li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>Protection of Personal Information (POPI) policy</li> </ul> |

#### Additional Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |
|------------------------------------------|
| None                                     |

#### 4.3.3 Exemptions

None

#### 4.4 900524-000-01-PM-04, Conduct routine maintenance of equipment and store equipment and material, NQF Level 4, Credits 6

| MODULE CODE         | MODULE TITLE                                                              | NQF LEVEL | CREDITS | MODE OF DELIVERY |
|---------------------|---------------------------------------------------------------------------|-----------|---------|------------------|
| 900524-000-01-PM-04 | Conduct routine maintenance of equipment and store equipment and material | 4         | 6       | Face-to-face     |

(a) Purpose of the Practical Skills Module:

The focus of the learning in this module is on providing the learner with an opportunity to demonstrate an understanding of conducting routine maintenance of equipment and storing equipment and materials.

(b) List of Practical Skill Activities:

| PRACTICAL SKILL CODE | ACTIVITY TITLE                                                                                         |
|----------------------|--------------------------------------------------------------------------------------------------------|
| PM-04-PS01           | Inspect, clean, and conduct minor repair and maintenance of tools and equipment (During and after use) |
| PM-04-PS02           | Store equipment, tools, and materials to national standards                                            |
| PM-04-PS03           | Conduct housekeeping activities                                                                        |

(c) Scope of each Practical Skill Activity:

| PM-04-PS01 INSPECT, CLEAN, AND CONDUCT MINOR REPAIR AND MAINTENANCE OF TOOLS AND EQUIPMENT (DURING AND AFTER USE)                                                                                                                                                |                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                   |                                                                 |
| Given an assignment, storage room, reporting logs, registers, cleaning material, grease, oil, labelled shelves, temperature control devices, ventilation system, tools, equipment, materials, maintenance guidelines, and computer. The learner must be able to: |                                                                 |
| PRACTICAL SKILL ACTIVITY ELEMENT CODES                                                                                                                                                                                                                           | PRACTICAL SKILL ACTIVITY ELEMENTS                               |
| PA0101                                                                                                                                                                                                                                                           | Conduct routine inspections of tools, equipment, and materials. |
| PA0102                                                                                                                                                                                                                                                           | Select engineering hand tools and equipment for serviceability. |
| PA0103                                                                                                                                                                                                                                                           | Use engineering hand tools and equipment carefully.             |
| PA0104                                                                                                                                                                                                                                                           | Respond to potential hazards and risks related to tools.        |
| PA0105                                                                                                                                                                                                                                                           | Conduct minor repairs on damaged tools.                         |
| PA0106                                                                                                                                                                                                                                                           | Perform final cleaning after repairs.                           |

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                  |
|------------------------|--------------------------------------------------------------------|
| AK0101                 | Forms of storage facilities                                        |
| AK0102                 | Manufacturers manual for different tools, equipment and material   |
| AK0103                 | Effects of temperature on tools, equipment, and material           |
| AK0104                 | Importance of ventilated storeroom                                 |
| AK0105                 | Tools and equipment minor repair and routine maintenance practices |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                 |
|----------|-------------------------------------------------------------------------------------------------|
| IAC0101  | Routine inspection of tools is conducted to workplace requirements, quality, and functionality. |



|         |                                                                                      |
|---------|--------------------------------------------------------------------------------------|
| IAC0102 | Tools and equipment are used to standard requirements to prevent exposure to damage. |
| IAC0103 | Damaged tools are repaired to functionality.                                         |
| IAC0104 | Tools and equipment are cleaned and kept dry to prevent rust and damage.             |

(c) Scope of each Practical Skill Activity:

|                                                                                                                                                                                                                                                                  |                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>PM-04-PS02 STORE EQUIPMENT, TOOLS, AND MATERIALS TO NATIONAL STANDARDS</b>                                                                                                                                                                                    |                                                        |
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                   |                                                        |
| Given an assignment, storage room, reporting logs, registers, cleaning material, grease, oil, labelled shelves, temperature control devices, ventilation system, tools, equipment, materials, maintenance guidelines, and computer. The learner must be able to: |                                                        |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                                                                                                                    | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>               |
| PA0201                                                                                                                                                                                                                                                           | Identify storage requirements for different materials. |
| PA0202                                                                                                                                                                                                                                                           | Categorize tools and materials for easy retrieval.     |
| PA0203                                                                                                                                                                                                                                                           | Apply labelling standards.                             |
| PA0204                                                                                                                                                                                                                                                           | Monitor storage conditions to prevent degradation.     |
| PA0205                                                                                                                                                                                                                                                           | Maintain an inventory log.                             |

(d) Applied Knowledge that underpins the Practical Skill Activity

|                               |                                                                    |
|-------------------------------|--------------------------------------------------------------------|
| <b>APPLIED KNOWLEDGE CODE</b> | <b>APPLIED KNOWLEDGE</b>                                           |
| AK0201                        | Forms of storage facilities                                        |
| AK0202                        | Manufacturers manual for different tools, equipment and material   |
| AK0203                        | Effects of temperature on tools, equipment, and material.          |
| AK0204                        | Importance of ventilated storeroom                                 |
| AK0205                        | Tools and equipment minor repair and routine maintenance practices |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

|                 |                                                                                                      |
|-----------------|------------------------------------------------------------------------------------------------------|
| <b>IAC CODE</b> | <b>IAC DESCRIPTION</b>                                                                               |
| IAC0201         | Material is stored in suitable conditions to prevent public exposure and damage.                     |
| IAC0202         | Tools and equipment are stored in categorised sections and labelled for easy retrieval.              |
| IAC0203         | Storage conditions are monitored to protect tools, equipment, and materials from adverse conditions. |
| IAC0204         | Inventory of tools, equipment, and materials is maintained to workplace and industry standards.      |

(c) Scope of each Practical Skill Activity:

|                                                                                                                                                                                                                                                                  |                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>PM-04-PS03 CONDUCT HOUSEKEEPING ACTIVITIES</b>                                                                                                                                                                                                                |                                                       |
| <b>PRACTICAL SKILL ACTIVITY SCOPE OUTLINE:</b>                                                                                                                                                                                                                   |                                                       |
| Given an assignment, storage room, reporting logs, registers, cleaning material, grease, oil, labelled shelves, temperature control devices, ventilation system, tools, equipment, materials, maintenance guidelines, and computer. The learner must be able to: |                                                       |
| <b>PRACTICAL SKILL ACTIVITY ELEMENT CODES</b>                                                                                                                                                                                                                    | <b>PRACTICAL SKILL ACTIVITY ELEMENTS</b>              |
| PA0301                                                                                                                                                                                                                                                           | Identify cleaning areas and tasks.                    |
| PA0302                                                                                                                                                                                                                                                           | Use appropriate cleaning materials and tools.         |
| PA0303                                                                                                                                                                                                                                                           | Apply safety guidelines during cleaning.              |
| PA0304                                                                                                                                                                                                                                                           | Dispose of waste according to workplace requirements. |

|        |                                   |
|--------|-----------------------------------|
| PA0305 | Perform post-cleaning inspections |
|--------|-----------------------------------|

(d) Applied Knowledge that underpins the Practical Skill Activity

| APPLIED KNOWLEDGE CODE | APPLIED KNOWLEDGE                                                  |
|------------------------|--------------------------------------------------------------------|
| AK0301                 | Forms of storage facilities.                                       |
| AK0302                 | Manufacturer manual for different tools, equipment, and materials. |
| AK0303                 | Effects of temperature on tools, equipment, and material.          |
| AK0304                 | Importance of ventilated storeroom                                 |
| AK0305                 | Tools and equipment minor repair and routine maintenance practices |

(e) Internal Assessment Criteria (IAC) for the Practical Skill Activity

| IAC CODE | IAC DESCRIPTION                                                                                              |
|----------|--------------------------------------------------------------------------------------------------------------|
| IAC0301  | Different cleaning areas are cleaned using appropriate materials and tools.                                  |
| IAC0302  | Health and safety guidelines are used during housekeeping activities                                         |
| IAC0303  | Post-cleaning inspection is conducted to verify the correct position of all tools, equipment, and materials. |

#### 4.4.2. Criteria for Accreditation

##### Physical Requirements:

| SKILLS DEVELOPMENT PROVIDER (SDP) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EQUIPMENT &amp; TOOLS</b>      | <ul style="list-style-type: none"> <li>Physical training facilities (or if using a hybrid or e-learning model – software or internet platform) conducive to hosting the number of learners comfortably and safely for the duration of this module.</li> <li>Facilities that meet the minimum requirements for learners' comfort (ablutions, hand washing facilities, sheltered from the elements, etc.) if relevant.</li> <li>All learning materials, lesson plans, workbooks, and assessment guides to cover the related topics.</li> <li>Tools equipment: soldering irons; insulation strippers (thermal type insulation strippers and mechanical wire strippers); wire bending tools; solder; flux; basic soldering connections (turret, bifurcated, hook, surface mounts, cups), solder sucker, inclinometers, tape measures, digital and laser distance meters, thermometers, steel rulers, engineer's squares, Vernier callipers, torque wrench, 5mm Industrial Metal Drill Bit (10 Pack), MULTI-SHARP Drill Bit Sharpener, Eclipse 300mm Shatterproof Hacksaw Blade 24TPI, 9V Zinc-Carbon Battery, Carbon Film Resistor ¼W 300Ω, Carbon Film Resistor ¼W 300Ω, 100X5MM ASSTD LEDS-5 COLORS, Miniature Toggle Switch, Red Panel Wire Solid 0.5mm<sup>2</sup> 100M, Black Panel Wire Solid 0.5mm<sup>2</sup> 100M, 0.90mm Solder Wire 500g per Roll, Vero Board - 50 x 100mm, Flat Bar – 100mm x 6mm – Mild Steel, SPANJAARD Engineering Marking Blue Aerosol, MAC AFRIC Aluminium Rivets Packets of 100 4.8 X 10 mm, Abrasive Handgel Cleaner Dispenser, SPANJAARD Engineering Marking Blue Aerosol, Conti Suit Econo - Royal/Blue, Dot Argon Safety Boot, Safety Glasses, Safety Gloves, First Aid Tool, Working at heights equipment.</li> <li>Record-keeping systems to capture learner data and issue a statement of results.</li> <li>All assessment instruments to cover the related topics.</li> <li>Tools and standards for internal assessment</li> </ul> |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CONSUMABLES</b> | Electrical cables (AC/DC), MC4 connectors, cable lugs and ferrules, insulation and heat-shrink materials, fuses and MCBs, mounting hardware (bolts, nuts, washers, rivets, anchors, brackets, clamps), sealing materials, solder and flux, cable ties, PPE consumables, safety warning tags and labels, marking materials, cleaning materials, and general renewable energy workshop consumables. |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Human Resource Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b>   | <ul style="list-style-type: none"> <li>Facilitators must hold a relevant qualification at NQF Level 5 or higher in Renewable Energy, Electrical, Mechanical, or a related technical field.</li> <li>Facilitators must have proven subject-matter competence in renewable energy concepts aligned to the specific knowledge module being delivered.</li> <li>Relevant Subject Matter Experts (SMEs) must have professional recognition and a minimum of three (3) years' industry experience in the renewable energy sector or related technical environment.</li> </ul> |
| <b>FACILITATOR/LEARNER RATIO</b>         | 1:20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### Legal Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>QUALIFICATIONS &amp; EXPERIENCE</b>   | <ul style="list-style-type: none"> <li>CIPC registered entity</li> <li>Valid Tax Clearance Certificate</li> <li>Compliant and current health and safety audit report</li> <li>Relevant labour legislation visible in a facility or on the platform (as required by current legislation)</li> <li>Protection of Personal Information (POPI) policy</li> </ul> |

#### Additional Requirements:

| <b>SKILLS DEVELOPMENT PROVIDER (SDP)</b> |
|------------------------------------------|
| None                                     |

#### 4.4.3 Exemptions

None

## 5. POSSIBLE SEQUENCING AND INTEGRATION

| ORDER | MODULE TITLE                                                                         | MODULE CODE         | LEVEL | CREDITS |
|-------|--------------------------------------------------------------------------------------|---------------------|-------|---------|
| 1     | Introduction to Renewable Energy                                                     | 900524-000-01-KM-01 | 4     | 4       |
| 2     | Use tools, measuring instruments, and equipment                                      | 900524-000-01-PM-01 | 3     | 7       |
| 3     | Equipment and Tools                                                                  | 900524-000-01-KM-02 | 4     | 7       |
| 4     | Plan and assist in the installation of the renewable energy plant                    | 900524-000-01-PM-02 | 4     | 8       |
| 5     | Principles of Working at Heights                                                     | 900524-000-01-KM-03 | 3     | 3       |
| 6     | Mitigate and respond to hazards associated with Renewable Energy system installation | 900524-000-01-PM-03 | 3     | 8       |
| 7     | Basic Mechanical Concepts of Renewable Energy                                        | 900524-000-01-KM-04 | 4     | 6       |
| 8     | Conduct routine maintenance of equipment and store equipment and material            | 900524-000-01-PM-04 | 4     | 6       |
| 9     | Basics of Electricity                                                                | 900524-000-01-KM-05 | 3     | 4       |
| 10    | Workplace Fundamentals                                                               | 900524-000-01-KM-06 | 4     | 5       |