

PVGreenCard

Powered by SAPVIA

South African Photovoltaic Industry Association

PV GreenCard
Assessment Centre Guidelines

SAPVIA PV GreenCard

Guidelines for setting up a PV GreenCard Assessment Centre

May 2023

IN PARTNERSHIP WITH



Implemented by









Contents

Background 2
Management 2
Skills Development 3
The Solar PV Service Technician National Curriculum 3
5-Day PV GreenCard Installer Training Course 3
2-Day PV GreenCard Assessment 3
How to issue the SAPVIA PV GreenCard As-Built report 4
Step 1 – Training 4
Step 2 – Assessment 4
Step 3 – Registration 5
Step 4 – Benefits of Being a PVGC installation Company. 5
Step 5 – Issuing 6
Requirements to set up a PV GreenCard Assessment Centre 7
Type of Assessment Centre 7
Application 7
1. Human Resources 7
- Solar PV Subject Matter Expert 8
- ETDQA Constituent Assessor 8
- ETDQA Constituent Moderator 8
Assessor and moderator Registration Process 8
Re-registration as assessor and moderator 9
2. Learning/Assessment Materials 9
3. Facilities (minimum requirements) 9
Setting up the Assessment Centre 10
Material and Equipment (minimum requirements) 10
Assessment Station 11
Required Equipment 12
PV On-Roof Installation Equipment 13
DC Wiring 13
AC Wiring 13
Consumables 14
Storage 15
Tools required to set up a PV GreenCard Assessment Centre 16
Hand Tools 16
Electrical Tools 18
Safety Equipment 19
Test Equipment 20
Other 20
Accreditation by SAPVIA 21
Summary of the Procedure 21
Step by step process to run a PV GreenCard Assessment 22
1. Promotion 22
2. Preparation 22
3. Theoretical Assessment 22
4. Practical Assessment 23
5. Invigilating the Assessment 24
6. Performance 24
7. Evaluation and Documentation 24

- Collecting Evidence 24
- Accuracy of measurements 25
- Compliance with SANS 10142 and OEM Specifications 25
- Weighted Sections 25
- Competency Mark 25
- Assessment Result 25
- Moderation 25

8. Final Result 25
9. Remedial Action 26
10. Appeal Application 26
11. Record of Result 26

Annexure A - Sample GreenCard 1
Annexure B - Application Form 2
Annexure C - QCTO recommended Roof space 3
Annexure D - Assessment centre criteria for a QCTO recognised qualification. 0
Annexure E - Course instructions 1
Annexure F - Assessment Schedule with Instructions 0
Annexure G - Solar PV Installer Assessment Results (example) 0
Terms and Conditions 2

List of Acronyms

AC	Alternating Current
DC	Direct Current
DGS Berlin	Deutsche Gesellschaft für Sonnenergie e.V. Landesverband Berlin Brandenburg
ETQ	
DoEL	Department of Employment and Labour
EIR	Electrical Installation Regulations
ETDQA	Education, Training and Development Quality Assurance
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
NERSA	National Energy Regulator of South Africa
OHSA	Occupational Health and Safety Act
PV	Photovoltaic
QCTO	Quality Council for Trades and Occupations
SABS	South African Bureau of Standards
SANS	South African National Standards
SAPVIA	South African Photovoltaic Industry Association
SAQA	South African Qualifications Authority
SARETEC	South African Renewable Energy Technology Centre

Background

The South African Photovoltaic Industry Association (SAPVIA) is a non-for-profit industry association that aims to promote, develop and grow the Photovoltaic ("PV") sector as part of the wider renewable energy industry in South Africa. SAPVIA is the representative voice of the solar PV industry in South Africa. SAPVIA's vision for solar PV to be a significant and reliable contributor to the South African electricity mix to advance energy security. This is to be achieved through policy and market alignment, and ultimately contribute to environmental sustainability as well as economic development agenda for the country.

Skilled labour and quality assurance mechanisms are key issues for the sustainable development of the solar PV Industry. To this end, SAPVIA alongside GIZ, SARETEC and GreenCape developed the "PV GreenCard Assessment" for PV installers in 2017. This assessment was developed based on the South African national qualification for Solar PV Installers. This is aimed at vetting installers' competencies to operate in the sector in order to protect the integrity of the solar PV industry. This assessment was designed to be a voluntary undertaking by the industry which is endorsed by SAPVIA.

Additionally, a 5-Day PV GreenCard Installer Training Course was developed to present the minimum knowledge requirements for Solar PV installers and prepare candidates to undertake the PV GreenCard Assessment. A list of Training Institutions and Assessment Centres can be found on the PV GreenCard website: https://www.pvgreencard.co.za/training-institutions/.

Management

The PV GreenCard program is owned, administered and managed by the SAPVIA Secretariat. The secretariat performs compliance monitoring and evaluation of existing training and assessment centres and performs an oversight and quality assurance role on behalf of the SAPVIA Management Committee. The SAPVIA Secretariat and Management Committee have the sole discretionary responsibility to:

- accredit new assessment centres,
- Ensure a standard of quality across all PV GreenCard Assessment Centres

SAPVIA will set up a PV Assessment Committee (PVAC) for oversight of the PV Assessment Centres made up of one of the original partners, GreenCape, a representative from the SAPVIA secretariat and Management Committee. The main task of the committee will be to;

- Ensure a standard of quality across all PV GreenCard Training and Assessment Centres
- Provide a periodic objective review of the PV GreenCard Assessment procedures and assessment content i.e., the Knowledge and practical exam.

Each year after the first year of appointment, the PV Assessment Centre must complete and submit a qualitative report, which serves the purpose of a self-evaluation and providing the SAPVIA Secretariat and management committee with the basis for continued monitoring, evaluation and review. Every 2 years the Assessment Centre will be subject to an inspection and evaluation by a solar PV subject matter expert and accredited Assessor appointed by the SAPVIA Secretariat.

Skills Development

The Solar PV Service Technician National Curriculum

The ***Solar Photovoltaic Service Technician, Curriculum Code 313109001, NQF Level 5*** was developed in 2010 and registered with the South African Qualification Authority (SAQA) under Qualification ID 99447 in December 2016. The National Qualification was based on the need for a national training offering to support the growing renewable energy industry. Although specifically focusing on utility-scale installations, the qualification consists of 4 modular part qualifications (Solar PV Mounter, Solar PV Installer, Solar PV Technician, and Solar PV Service Technician) which ensures inclusivity of career prospects for a wide range of candidates from matric/school leaver.

5-Day PV GreenCard Installer Training Course

Based on the "Solar PV Installer" part qualification, SAPVIA alongside SARETEC and GreenCape with support from GIZ and DGS Berlin, and in partnership with merSETA (the appointed development and quality partner to QCTO) have developed a 1-week reference training course tailored to the solar PV installers.

Having a registered national qualification means that the public, as well as private training providers, can align their PV training offering to the nationally accepted and accredited qualification. SAPVIA supported by the GIZ and DGS Berlin then developed reference training material (presentations and supporting documents) for a 5-day PV GreenCard Installer Training Course following the exit outcomes of the curriculum specific to the Solar PV Installer Part Qualification. The course was developed to present the minimum knowledge requirements for solar PV installers and prepare candidates to undertake the PV GreenCard Assessment.

2-Day PV GreenCard Assessment

The 2-day assessment includes a theoretical as well as a practical assessment where candidates are required to mount PV installations on a simulated roof environment. The purpose of this assessment is to primarily ascertain the competency of installers and vet their abilities to gain access to the PV GreenCard quality mechanism.

How to issue the SAPVIA PV GreenCard As-Built report

The PV GreenCard is a national, standardised hand-over report for embedded solar PV installations (Often also called an “as-built report”). Practically, the PV GreenCard is a checklist that installers fill out after completion of an installation to hand over to their clients. The PV GreenCard As-Built report includes detailed information on the type of panels and inverters used, the equipment specification and serial information, the capacity of the system, and commissioning tests.

This detailed documentation helps investors and clients to trust the installer and gives proof that everything was installed according to SAPVIA’s PV GreenCard quality guidelines. Furthermore, structured documentation is very useful when spare parts or repairs are required after a couple of years of operation of the system.

Only SAPVIA PV GreenCard certified installers are allowed to issue a PV GreenCard. SAPVIA’s aim is that every small-to medium-scale Solar PV installation gets a PV GreenCard.

For Installers, issuing the SAPVIA PV GreenCard is a 5-step process:

Step 1 – Training

training is vital preparation for the PV GreenCard Assessment. SAPVIA endorses training providers to offer training as preparation or a remedial action for the assessment. The training is structured to cover the basics of solar PV installation (practical work) and basic design. Training provides the vital background to pass the PV GreenCard Assessment and acts as a refresher course for those who do not successfully complete the assessment.

Step 2 – Assessment

The PV GreenCard programme is founded on quality and installers must pass the PV GreenCard Assessment to demonstrate competence and gain access becoming part of the PV GC programme. This l allows these successful candidates to issue a PV GreenCard. The PV GreenCard Assessment is structured to recognise the participant’s theoretical and practical knowledge. Participants need to enrol for the assessment at one of the accredited assessment centres and take the theoretical and practical exam.

A list of Assessment Centres may be found on the PV GreenCard Website at https://www.pvgreencard.co.za/assessment-centres/.

Step 3 – Registration

Installation companies duly registered in terms of the laws of the Republic of South Africa, and which comply with the minimum criteria will be eligible to register.

Installers can register their company at https://www.pvgreencard.co.za/reg/auth/inst-reg.php and pay subscription fee. Only employees of the company that passed the PV GreenCard Assessment can register as official PV GreenCard issuer of the company.

The minimum criteria for installer companies are:

- An individual who has passed the PV GreenCard Assessment is in the company's full-time employment.
- The company is registered with the Department of Employment and Labour as an electrical contractor.

All installer companies must comply with the SAPVIA Installation Guidelines, relevant SANS Standards, and all other relevant regulations, including Municipals SSEG requirements, when installing Solar PV systems.

Installation companies are required to register annually to confirm compliance with the PV GreenCard Programme, which also serves to reaffirm the installer's on-going commitment to implementing safe and quality Solar PV installations.

Step 4 – Benefits of Being a PVGC installation Company.

Apart from ensuring quality standards are maintained, registered companies have access to latest regulatory, technical and market information and will be promoted on the GreenCard website.

The PV GreenCard programme is a recognised quality assurance intervention among different stakeholders. As a registered installer, a company is profiled on an interactive geographical map. They can also link the map on their website and use the PV GreenCard registration as a competitive advantage to market their business and install their PV systems.

The benefits of registration are:

- Installers are vetted and recommended by the industry association.
- Installers are part of the SAPVIA endorsed installer database listed on the PV GreenCard website.
- Installers are typically eligible to tender for projects that prescribe the PV GreenCard as a requirement.
- Installers have access to the latest technological advancement in the industry and associated best practices via communication with the SAPVIA Secretariat
- Installers are associated with an industry promoted PV installation quality label.
- Add to the reputation of installers' Solar PV installation company.
- Installers have access to suppliers that prescribe the PV GreenCard as a requirement.
- Installers have access to an operative dispute resolution service facilitated by SAPVIA.
- Installers can collectively raise concerns regarding policy, regulations, and standards though SAPVIA as the industry voice.
- Installers enjoy the benefits of industry guidelines and installation checklists.
- Sponsorship opportunity – Installers' companies featured on the PV GreenCard website.

- Customers can find registered installers on an interactive map on the PV GreenCard website.

Step 5 – Issuing

Registered installers can issue a PV GreenCard per installation. The GreenCard enforces quality by ensuring that the correct procedures are followed, and that the relevant documentation are available. There is a minimal fee payable per GreenCard issued.

Requirements to set up a PV GreenCard Assessment Centre

Type of Assessment Centre

Prospective Assessment Centre operators have two options when setting up the facility.

1. They can follow the minimum requirements which will enable them to offer PV GreenCard Assessments as set out below.
2. Alternatively, they can fulfil a more stringent draft Quality Council for Trades & Occupations (QCTO) requirements allowing for an official accreditation. This would create the basis for assessed candidates to apply for a recognition of prior learning, provided they meet all prerequisites to be defined by QCTO, so participants could receive the formal "Solar Photovoltaic Installer" part qualification when applicable.

While compliance with QCTO requirements is desirable, the required budget may not be justifiable at the beginning. Furthermore, accreditation is a lengthy process. Consequently, SAPVIA leaves it to the prospective Assessment Centre operators decide on the two options. It should, however, be mentioned that centres offering the basis for a recognition of prior learning may have an advantage in time. Hence, it is recommended centres consider that future expansion during the initial planning phase.

Application

Prospective Assessment Centre operators need to apply to become a registered PV GreenCard Assessment Centre. – (APPLICATION FORM CAN BE FOUND IN ANNEXURE B). The entity must be a member of the South African Photovoltaic Industry Association (SAPVIA) to qualify for registration as a PV GreenCard Training Centre. Each prospective assessment centre must be applied for separately. The application process is for a single defined assessment centre. The application should include pictures of the facilities and equipment and CVs of the human resources. To set up a SAPVIA PV GreenCard Assessment Centre, the following minimum requirements need to be adhered to:

1. Human Resources

The assessment must be implemented and evaluated by a.

- Solar PV Subject Matter Expert
- ETDQA Constituent Assessor
- ETDQA Constituent Moderator

Note: Hereby, the ETDQA Constituent Assessor and Moderator have to be 2 persons. The Assessor and the PV Subject Matter Expert can be the same person.

- Solar PV Subject Matter Expert

The Solar PV Subject Matter Expert has to have the following qualifications:

- Working experience in designing and installing of PV systems.
- 2 years technical experience in the PV Industry or the installation of minimum 20 PV systems.
- Attend a 5-Day SAPVIA Solar PV Installer Course
- Pass the PV Assessment Theory and Practical paper at an accredited facility.

- ETDQA Constituent Assessor

The person must be registered as an ETDQA Constituent Assessor. The application to be registered should be approved if the applicant can provide proof of the following criteria:

- Assessors must have completed a QCTO qualification: Learning and Development Practitioner, SAQA ID Number: 101321, NQF Level: 5, Credits: 190, or a Conduct an Outcomes Based Assessment course SAQA Unit Standard ID Number: 115753, NQF Level. 5, Credits: 15. or 7978 'Plan and Conduct Assessment of Outcomes Based Learning Outcomes'
- Competency in relation to the unit standard(s) and or qualifications for which they apply to be registered at (or preferably above) the level of the said standard(s) and/ or qualification
- Two years relevant occupational experience/ expertise; and
- Relevant subject matter expertise
- Please follow this link https://www.qcto.org.za/index.php/skills-development-provider-accreditation-form

- ETDQA Constituent Moderator

The person must be registered as an ETDQA Constituent Assessor. The application to be registered should be approved if the applicant can provide proof of the following criteria:

- Registration as an ETDQA Constituent Assessor (current)
- Achievement of unit standard 115759 'Conduct moderation of outcomes-based assessment or 7977 'Conduct Moderation'
- Two years of relevant occupational experience particularly in the design and implementation of assessments; and
- Relevant subject matter expertise.

Assessor and moderator Registration Process

It is recommended that the assessor and moderator:

- Attend a 5-Day SAPVIA Solar PV Installer Course
- Write and pass the PV Assessment Theory and Practical paper at an accredited facility

Applications to be registered as a Constituent Assessor or Moderator shall be submitted and processed according to the following procedure:

- The applicant must request the assessor / moderator registration form from an ETDP SETA Provincial Office or download the registration forms from the ETDP SETA website
- The applicant will complete and submit the form to the ETDP SETA Provincial Office, together with the required documentation

- The Provincial Office will upon receipt of the application record and evaluate the application to ascertain compliance to the ETPD SETA criteria
- If the application meets the ETDP SETA requirements the applicant will be registered as an ETDQA Constituent Assessor/ Moderator on the SETA's national database. A notification letter will be sent to the applicant informing them of their registration status.
- If the application is unsuccessful a notification letter will be sent to the applicant informing him or her about the reasons for not being registered.

Re-registration as assessor and moderator

Registered assessors and moderators must complete and submit the assessor/ moderator re-registration form 30 working days prior to the expiry of registration in order to avoid a period of non-registration.

2. Learning/Assessment Materials

The applicant should submit the following:

- Reference material - SANS10142 and OEM Specifications of all used equipment.
- Compliance with all relevant health and safety requirements as stipulated in the OHS act and may include a medical bag or access to medical treatment, fire extinguishers, and related equipment.
- To be supplied by SAPVIA.
    - PV GreenCard Guidelines,
    - Question paper and guidelines for theoretical knowledge exam, and
    - Assessment paper and guidelines for practical exam

3. Facilities (minimum requirements)

The applicant must have access to a suitable facility to conduct the assessment which includes the following.

- Classroom facilities with a capacity to seat the maximum number of candidates that can be assessed at one time. This will be dictated by the number of testing stations available (4 persons per testing station).
- Workshop facilities with the capacity to house several assessment stations. One assessment station consists of a suitable roof area and installation area with relevant equipment, as described in this document; For one fully equipped assessment station ground space of 100m2 (outdoor or indoor) is required – setup instructions as described in ANNEXURE C – QCTO RECOMMENDED ROOF SPACE.
- Store facilities to store assessment tools, materials, and equipment.
- Toilet facilities, resting space, etc.

The facility should include the specified equipment, be safe, secure and accessible to candidates, and meet the relevant standards for occupational health and safety.

Institutions that want be become a QCTO accredited PV Assessment centre should fulfil the QCTO requirements shown in ANNEXURE D - ASSESSMENT CENTRE CRITERIA FOR A QCTO RECOGNISED .

It is planned that this assessment will lead the way for the development of a Recognition of Prior Learning (RPL) Toolkit in order to accumulate credits counting towards an officially recognized qualification.

Whilst it is recommended that centres target compliance with full QCTO accreditation to enable the participants to obtain RPL. however, it is not necessary for commencement of PV Assessment Centres operation. Participants who pass the assessment in non QCTO certified centres are still recognized by the industry.

Setting up the Assessment Centre

Material and Equipment (minimum requirements)

The specific material required for the assessment station will be roof dependant, but the assessment will be done on the installation, wiring, and commissioning of a Grid-Tied PV system as depicted in Figure 1 for the DC installation and Figure 2 for the AC installation.

A minimum PV system of 2.0 kWp must be installed with the following required components:

- 8 x PV Modules (minimum 250Wp per solar module).
- PV Disconnect device (DC Isolator or DC breaker).
- DC Fuses (Positive and Negative)
- Single Phase Grid-tied inverter (according to the NRS-097-2-1:2017).
- 2-Pole AC Disconnect device close to the inverter.
- Optional 2-Pole Lockable Disconnect device (NRS 097-2-1:2017). This is generally required for systems larger than 30kVA but utility dependant.
- Pre-wired DB Board with the following minimum devices:
    - 2 Pole main breaker/Isolator. This device will be fed from the mains via a plug and extension lead or hard-wired permanently.
    - Earth leakage unit.
    - Earth Leakage protected Circuit breaker wired via a switch to a light (to indicate AC present).
    - Optional: Plug point and circuit breaker Earth Leakage protected.
    - Space for a 2-pole circuit breaker wired from the PV circuit (to be installed by candidates).
    - Space for Surge Protection (to be installed by candidates).
    - Earth Bar.
    - Neutral Bar for Earth Leakage protected circuits.

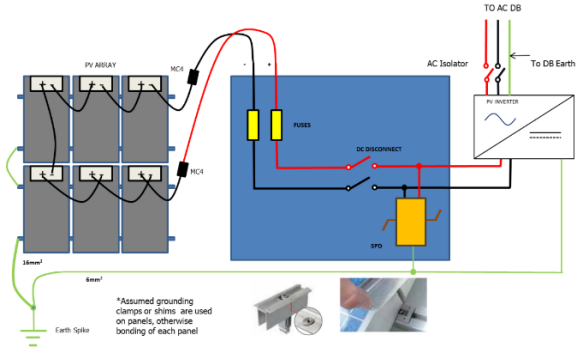


FIGURE 1: DC INSTALLATION REQUIREMENTS

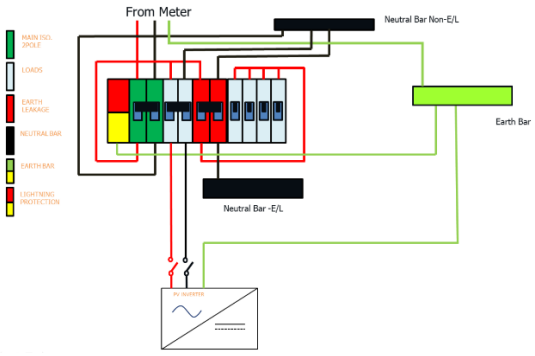


FIGURE 2: AC INSTALLATION REQUIREMENTS

Assessment Station

The assessment station will have the following minimum requirements:

- Suitable roof or structure for 8 modules with space to work, including required safety clearance distance. ANNEXURE C – QCTO RECOMMENDED ROOF SPACE
- The roof structure needs to be strong enough to hold up to 5 candidates.
- The roof structure can be permanent, movable or ground-assembled.
- The roof covering can be:
    - Corrugated Iron.
    - Concrete tiles.
    - 'Kliplok', 'Saflok' or similar (non-penetrating).
    - IBR.
- For metal coverings, ensure that the metal thickness is sufficient to prevent roof damage (minimum 0.55mm or thicker recommended).
- Suitable mounting space for the electrical installation with enough space to mount all the DC protection devices, Inverter, AC protection devices, and pre-wired DB Board. Figure 4.
- The mounting space can be integrated into the roof structure or a separate structure or wall close to the roof structure; Not more than 5 or less than 3 candidates at one assessment station at a time, with one assessor (1:4 ratios preferred).
- Each candidate group must have a dedicated assessment station for the duration of the assessment. Assessment stations must be stripped down and clear of any task material before the commencement of the assessment. Each station must be numbered.



FIGURE 3: ROOF STRUCTURES



FIGURE 4: MOUNTING AREA



FIGURE 5: CONCRETE TILE



FIGURE 6: CORRUGATED SHEET



FIGURE 7: SAFLOK SHEET

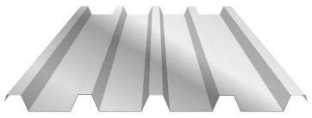


FIGURE 8: IBR ROOF SHEET



FIGURE 9: KLIPLOK ROOF SHEET



FIGURE 10: COMPLETED INSTALLATION TO BE ASSESSED

Required Equipment

The following equipment needs to be purchased to set up a testing station:

PV On-Roof Installation Equipment

Equipment	Specification	Quantity
PV Modules	Minimum 250Wp	8
Roof hooks, hanger bolts, roof clips	Roof Dependent: Concrete Tiles – Roof hooks Corrugated sheet – Hanger bolts Kliplok – Roof clamps	Minimum 4-5 per rail 16-20
Spacers	Only for roof hooks 5mm thick	Minimum 2 per roof hook
Mounting screws	For roof hooks	Minimum 2 per roof hook
Rails	Dependant on clamping system – may be side entry or bottom entry	Landscape/Portrait installation dependant
End Clamps	Suitable for selected rail	Minimum 8
Mid Clamps	Suitable for selected rail	Minimum 12
T-Bolts and nuts	Specified for rail (8-10mm)	One per roof-hook or clamp minimum. Also used to bond rails together.
Earth 'shims'	Optional: Mounted between module and rail to improve bonding. If used, only bonding between rails required and not between individual modules.	One per mid/end clamp

DC Wiring

Equipment[1]	Specification	Quantity
DC Disconnect Device	DC Isolator rated for the string current/voltage with suitable enclosure	1
Fuse holder and Fuses	Rated for the string current/voltage with suitable enclosure	2
Surge arrestor	DC Type II with suitable enclosure	1

AC Wiring

Equipment	Specification	Quantity
Inverter	Grid-tied inverter suitable for the string voltage and current. Start-up voltage should be low enough to start up from 6 modules in series, even when it is very hot. The inverter needs to be NRS097-2-1 certified.	1
AC Isolator	2 Pole, to be mounted close to the inverter. With suitable enclosure.	1
Surge arrestor[1]	DC Type II	1
Optional Lockable Disconnect device	2-Pole Lockable Disconnect device (NRS 097-2-1:2017 paragraph: 2.2.2.13). This is generally required for systems larger than 30kVA but utility dependant.	1
DB Board	DB Board with enough space for: 2-pole main isolator Earth Leakage unit Circuit Breaker for light	1

[1] Can be combined into 1 unit

Equipment	Specification	Quantity
	Circuit Breaker for plug 2 Pole PV Breaker (not permanently wired – to be installed by candidates)	

Consumables

The following consumables will be required and should be topped up regularly

Equipment	Specification	Comments
Earth Bonding cable	6mm2 Green/Yellow	
Earth Bonding Lugs	Ring 4mm hole x 6mm cable. For bonding between modules Ring 8mm hole x 6mm cable. For bonding between rails	
Washers	Stainless steel serrated 4mm. For earthing lugs	
Bolts and nuts	10-16mm M4 for bonding lugs to modules	
T-Bolts + nuts	8mm to bond rails together	
PV Cable	PV1-F or similar 4mm^2 PV rated cable – black or red and black	
Cable Ties	150-300mm cable ties UV Resistant	
Concrete Tiles	To replace broken tiles on concrete tile roofs.	
PV Connectors	MC4 (M+F) Between string and DC protective devices. Other types may be required to the inverter e.g., Sunclick	
Trunking	PVC 40x40 or similar with covers	
Sprague tubing	20mm Sprague	
Conduit	20mm PVC conduit with male adaptors and saddles	
Glands	PVC No 1	
Fasteners	Various depending on mounting surface. To mount: • PVC Conduit • Protection boxes • Inverter Isolator etc.	
AC Cable	Twin and Earth 2.5mm Red/Black House wire 2.5mm/4mm to wire isolator in DB board	
Personal Protective Equipment (PPE)	Ear plugs, gloves, safety glasses etc.	

Fuses	15A PV Fuses	
Batteries	For instruments	
Ferrules and lugs	Bootlace ferrules 4 mm2 Bootlace ferrules 2,5 Bootlace ferrules 1,5 Lugs 4 mm x 6 mm Lugs 2,5 mm2 x 6 mm Lugs 1,5 mm2 x 6 mm	
Spacers	For roof hooks	
Mounting screws	For roof hooks	
Labelling material	Labelling of DB Board and equipment. Masking tape can be used.	

Storage

The storage facility must be suitable sized to hold all the necessary tools, materials, equipment etc. The store must be lockable. All types and quantities of tools, materials, and equipment must be controlled through an asset register. All materials, tools, equipment must be booked out to a candidate and check when goods are returned.

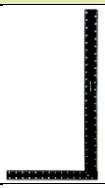
Tools required to set up a PV GreenCard Assessment Centre

A set of tools is required per roof. The following lists covers most roof types. Depending on the specific roof(s) used in the assessment centre, the tool list can be reduced or increased to fit the roof(s). For instance, if a tile roof is not used, an angle grinder will not be required. Also, a full set of tools may not be always necessary. Only the specific sizes required for the mounting system used can be provided.

Hand Tools

Hand Tools	
Measuring tape	
cutter knife	
Set of open-end wrenches (spanner) As a minimum, the sizes required for the mounting system(s) used will be required.	
Permanent marker	
Chalk Line	
Brick laying cord or Fish Line	
hexagon socket screw keys (Socket set and ratchet spanner As a minimum, the sizes required for the mounting system(s) used will be required.	

Hand Tools	
Crimping tool MC4	
Crimping Tool (Lobster)	
Set of screwdrivers (flat and cross-headed)	
Set of socket wrench As a minimum, the sizes required for the mounting system(s) used will be required.	
Torx bit set As a minimum, the sizes required for the mounting system(s) used will be required.	
Nutsetter (8 and 10mm)	
Gripper/pincer (set)	
Side cutting pliers	
Set of pliers	
Folding rule	

Hand Tools	
Set Square	
Spirit Level	
Hand Files Required if rails will be cut	
Hack Saw Required if rails will be cut	
Utility Knife	
Torque Wrench (10-25Nm) Optional if the drilling machine/cordless screwdriver have reliable torque settings	

Electrical Tools

Electrical tools	
Cordless screwdriver with bits Optional – the cordless drilling machine can also perform this functionality	

Electrical tools	
Drilling machine cordless (with spare battery)	
Drilling machine	
set of drilling bits wood, steel, stone	
Hole saw set (or 20mm hole saw minimum)	
Flex (metal/stone plate) Saw or angle grinder. (Alternatively, a milling machine)	

Safety Equipment

Safety Equipment	
Safety gloves, protective glasses As mentioned in the safety regulations for all tools in use	
Hard hat / Bump caps For assessment bump caps are recommended, on site hard hats may be compulsory	
Safety shoes, appropriate clothes Shoes with metal cap, reinforced sole (Provided by learners)	

Test Equipment

Test Equipment	
Multimeter (the measurement of voltage and amperage)	
DC Clamp, 1000V AC/DC, CAT III	
Other test equipment is optional and normally used by a qualified electrician when issuing a CoC.	

Other

Other Equipment	
Stepladder for assessment	
Reference Material (Most recent versions of reference material specified required)	• Occupational Helath and Safety Act (OHSA) • Electrical Installation Regulations (EIR) • SANS 10142-1 (wiring of premise part 1 low voltage installations) • SANS 60364-7-712:2018 Requirements for special installations or locations - Solar photovoltaic (PV) power supply systems • NRS 097-2-1: Grid interconnection of embedded generation, part 2: small-scale embedded generation, section 1: utility interface • OEM Specifications and installation manuals
Medical Bag/ First Aid Kit	Suitable first aid kit
Fire extinguishers	According to local regulations

Accreditation by SAPVIA

Once an application is received, the SAPVIA Secretariat will review and determine if the Assessment Centre has met all of the requirements as listed in this document and could be accredited based on the documents submitted, this will be followed by a site visit. This is to ensure that quality standards are maintained across Assessments Centres. The Assessment Centre will then be approved or declined with recommendations to resubmit.

SAPVIA will provide a checklist for this accreditation based on the presented guideline. The aspirants have to provide documentation of the established Assessment Centre and proof that they comply with the human resource requirements.

Summary of the Procedure

The following procedure should be followed:

- Identify suitable site/facility.
- Secure a storage area, installation area, and examination area.
- Design the assessment station based on the requirements and procure the required materials and consumables.
- Build the testing station(s).
- Procure the tools based on the tool list provided.
- Procure Safety and Test equipment.
- Document the material, tools, and consumables to control the issuing and return of it.
- Inform SAPVIA of the completion of the testing station(s) and arrange for an inspection to approve the station(s).

Step by step process to run a PV GreenCard Assessment

1. Promotion

Once the Assessment Centre is endorsed by SAPVIA, it is then able to promote its first PV GreenCard Assessment. To undertake the assessment, the following steps should be adhered to:

- Selection of a date for the assessment
- Sending the date to SAPVIA and publish the date on the Centre's website
- Sending a confirmation e-mail to all approved participants with the following information:
    - Title: SAPVIA PV GreenCard Assessment
    - Start date and Duration:
    - Experts/Assessor/ Moderator:
    - Day 1 – Theoretical Assessment:
        - Date, Time and Venue (recommended half day)
    - Day 2 – Practical Assessment
        - Date, Time and Venue (recommended full day)
        - Special Instructions: based on ANNEXURE F – ASSESSMENT SCHEDULE WITH INSTRUCTIONS.

This will be published on the PV GreenCard website and promoted through the SAPVIA social media and newsletter channels. All queries or responses will be sent directly to the assessment centre for processing.

2. Preparation

For the Assessment Centre to perform an assessment, the following steps will be required:

- Printing of materials (only enough for the number of participants).
    - Attendance register including full address and ID number.
    - Theoretical assessment question paper
    - Practical assessment paper and instruction sheets.
    - Reference materials as required.
    - Assessment mark sheets
- Confirmation of availability of the venue for theoretical assessment, including flipchart, whiteboard, and relevant markers.
- Confirmation that the assessment station(s) and installation areas are ready, that all equipment and consumable materials are available.
- Arranging for the pre-installation (with faults) of three modules per roof.
- Arrangements for catering.

3. Theoretical Assessment

On the day of the assessment, the following procedure needs to be followed:

- Signing of attendance register by all candidates.
- Collection of a copy of the ID of candidates
- Pre-assessment discussion with candidates:
    - Assessment rules.
    - Facilities - store, toilets, restroom, assessment stations.
    - Assessment process - instructions, deviations, marking.
    - Reference material - SANS 10142 and OEM Specifications.
    - Health and Safety relevant to the centre.
    - Post assessment - feedback, results, and appeal process.
- Signing of the assessment rules by all candidates.
- The assessor must allow 15 minutes for questions and must record any deviation that might occur due to changes in the assessment process. All candidates must switch off cell phones and hand them in to the assessor before the commencement of the assessment. All ID documents must be checked, copies must be attached to candidate's mark sheets.
- The assessor will ensure that all candidates have the necessary tools/stationary/equipment at their disposal to complete the assessments.
- All candidates must start the assessment at the same time. The time allocated for the assessment must be clearly displayed for all candidates to see.
- An “Assessment in process” sign must be displayed on the door of the assessment room.

4. Practical Assessment

The assessor must ensure that the following is in place before assessing any candidates:

- All materials, tools, and equipment are available.
- All assessment stations are clean and operational.
- All reference material including technical specifications are available.
- All supplied tools and equipment are in good working order.
- Medical box(es) is fully stocked.
- Assessment register (must be signed by the candidate).
- Assessment rules (must be signed by the candidate).
- Assessment instructions.
- Reference material as required.
- Assessment mark sheets.
- Indemnity form (all candidates must sign before assessment).
- All candidates need to be assigned to an assessment station (only relevant for Assessment centres with more than on station)
    - Assigning of the station must be transparent and fair.
    - Candidates will draw the station to be assigned to.
    - No swapping of stations will be allowed.

The following components of the assessment must be observed and monitored during the assessment process namely:

- The materials list.
- Safety in the workplace
- Use of materials and tools

The assessor will measure these components and allocate marks as per the mark sheet. All comments must be noted on the mark sheet.

The assessor must ensure that all candidates have the necessary PPE before starting the assessment. All candidates must start the assessment within 10 minutes of each other. All cell phones must be switched off and handed in to the assessor before the commencement of the assessment.

5. Invigilating the Assessment

The assessor(s) must be present throughout the assessment to ensure that rules are adhered to. Any contravention of the assessment rules must be noted, and remedial action must be taken. Any of the following deviations during the assessment must be noted.

- Candidate abandons assessment.
- The candidate fails to comply with assessment rules.
- The candidate does not adhere to the OHS Act.
- The candidate is injured during the assessment.
- The assessment is suspended for any reason.

Candidates who complete the assessment may leave the assessment area only once they have handed in all the necessary documentation and the assessor has checked the workpiece as per the relevant mark sheet. All candidates who have not completed their assessment when the allocated time is up will immediately stop working and wait for further instructions from the assessor. Candidates who wish to make any appeals post the assessment must notify the assessor and then wait until all candidates have completed their assessments.

The appeal has to be in writing and submitted to the assessor within 24hrs of the completion of their assessment. The candidate's workpiece must not be stripped until it has been photographically documented for further reference.

6. Performance

A detailed sample schedule with instructions on the implementation for the two-day assessment is proposed in ANNEXURE C – QCTO RECOMMENDED ROOF SPACE

7. Evaluation and Documentation

The following process should be followed during and after the assessment:

- Collecting Evidence

When marking the practical assessment, assessors must ensure that sufficient evidence is collected to ensure validity, accuracy, and consistency of the marking process. This might include taking photographs of the workpiece to substantiate assessment results and to support constructive feedback and remedial training.

Before evaluating any assessment, assessors should ensure that the candidate’s details on are verified as being correct. Ensure that a copy of the candidate's ID forms part of the assessment mark sheet.

All assessor comments must be noted on the mark sheet below each assessment section. If the candidate has achieved full marks in a section, the assessor must note that the candidate is competent.

All assessments will be marked regardless of whether the candidate has completed the assessment. All candidates' scores must be added to the assessment register.

- Accuracy of measurements

All incorrect measurements must be recorded on the mark sheet. Note that any deviation will supersede the original instruction provided that these deviations do not impact on any of the original measurements and that the deviation was recorded and signed off by the assessor before or during the assessment.

- Compliance with SANS 10142 and OEM Specifications

Compliance with the above is critical and therefore is weighted (*) in the mark sheet. In the case of non-compliance, the assessor must indicate the section of the law/act/specification that has been contravened.

- Weighted Sections

Note that should a candidate score "0" for any 3 weighted (*) sections the candidate will automatically fail the assessment.

- Competency Mark

The assessor must add up all scores and convert to a percentage (%). The candidate must achieve a minimum of 80% to be deemed competent.

- Assessment Result

The assessor will make a cross in the relevant (COMPETENT or NOT YET COMPETENT) box.

- Moderation

The assessment result must be checked by the moderator before giving feedback to the candidate. If the result has been successfully verified, then the assessor and moderator will sign where applicable, and the assessor can then give feedback to the candidate.

8. Final Result

On completion of the marking process, adding up of scores and verification of results the assessor will call the candidate in for a formal feedback session.

Both, the theoretical and practical assessments have an overall 80% pass rate. There are however a 58% to 42% weighting of the practical assessment over the theoretical assessment. This means that a

candidate may still achieve an overall pass-rate even though 80% has not been achieved in the theoretical assessment. As an example:

Assessment	Max Marks	Marks Scored	Marked percentage	Validated Percentage (Marked percentage x weighting factor)*
Theoretical	137	100	72,99	30,66%
Practical	158	143	90,51	52,49%
Overall	295	243		83,15%

- *72,99% x 42%=30,66%; 90,51%x58%=52,49%

Result Theory: Not yet competent

Result Practical: Competent

Result Overall: Competent

SAPVIA will provide an excel template for the result evaluation.

9. Remedial Action

In the case of a candidate completing and passing the assessment, the assessor will still advise with regards to future development. In the case of a candidate not completing or failing the assessment the assessor must advise the candidate on the remedial action and training available before reapplying for another assessment date.

10. Appeal Application

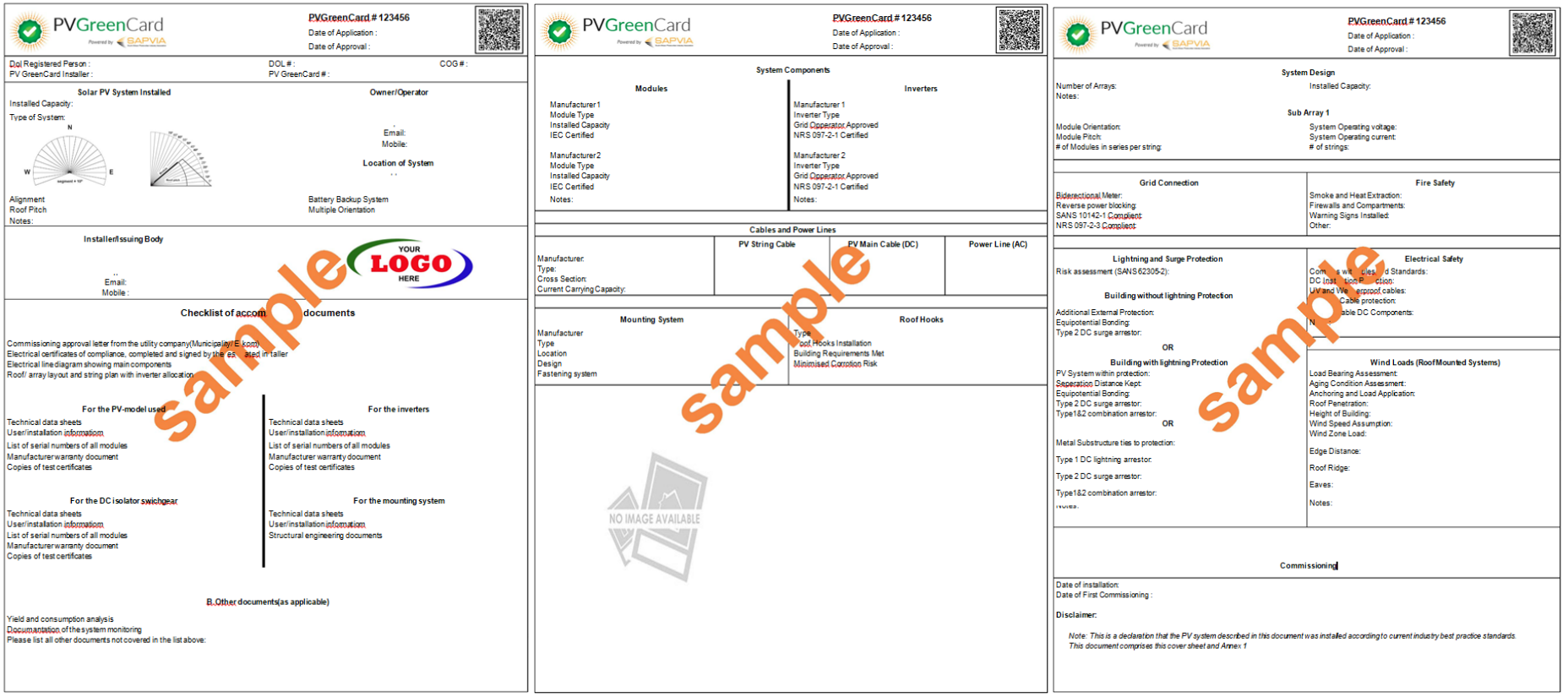
Should the candidate wish to appeal the outcome of the assessment the assessor will assist the candidate to complete an appeal form and inform the candidate of the procedures to follow. The assessor will then inform the moderator in writing and submit all assessment documentation as evidence. All appeals must be handled within six weeks from the date of the appeal.

11. Record of Result

All candidates must be given a copy of their final assessment result following the example provided in ANNEXURE G - SOLAR PV INSTALLER ASSESSMENT RESULTS (EXAMPLE). This information must be distributed via e-mail cc to SAPVIA. SAPVIA must get a separate email with the list of the candidates and their results.

Digital copies of all assessment documents, registers, and evidence must be filed for safekeeping and future reference. Any recommendations for changes in the assessment must be given in writing to the assessor for further development.

Annexure A - Sample GreenCard



PVGreenCard

PVGreenCard # 123456
Date of Application :
Date of Approval :

DoI Registered Person :
PV GreenCard Installer :
DOL # :
PV GreenCard # :
COG # :

Solar PV System Installed
Installed Capacity:
Type of System:
Alignment
Roof Pitch
Notes:

Owner/Operator
Email:
Mobile:

Location of System

Battery Backup System
Multiple Orientation

Installer/Issuing Body
Email:
Mobile :

YOUR LOGO HERE

Checklist of accom documents

Commissioning approval letter from the utility company(Municipality/ Eskom)
Electrical certificates of compliance, completed and signed by the es ted in taller
Electrical line diagram showing main components
Roof/ array layout and string plan with inverter allocation

For the PV-model used
Technical data sheets
User/installation information
List of serial numbers of all modules
Manufacturer warranty document
Copies of test certificates

For the inverters
Technical data sheets
User/installation information
List of serial numbers of all modules
Manufacturer warranty document
Copies of test certificates

For the DC isolator switchgear
Technical data sheets
User/installation information
List of serial numbers of all modules
Manufacturer warranty document
Copies of test certificates

For the mounting system
Technical data sheets
User/installation information
Structural engineering documents

B.Other documents(as applicable)
Yield and consumption analysis
Documentation of the system monitoring
Please list all other documents not covered in the list above:

sample

PVGreenCard

PVGreenCard # 123456
Date of Application :
Date of Approval :

System Components

Modules
Manufacturer 1
Module Type
Installed Capacity
IEC Certified

Manufacturer 2
Module Type
Installed Capacity
IEC Certified
Notes:

Inverters
Manufacturer 1
Inverter Type
Grid Opperator Approved
NRS 097-2-1 Certified

Manufacturer 2
Inverter Type
Grid Opperator Approved
NRS 097-2-1 Certified
Notes:

Cables and Power Lines

	PV String Cable	PV Main Cable (DC)	Power Line (AC)
Manufacturer:			
Type:			
Cross Section:			
Current Carrying Capacity:			

Mounting System
Manufacturer
Type
Location
Design
Fastening system

Roof Hooks
Type
Roof Hooks Installation
Building Requirements Met
Minimised Corrotion Risk

NO IMAGE AVAILABLE

sample

PVGreenCard

PVGreenCard # 123456
Date of Application :
Date of Approval :

System Design
Number of Arrays:
Notes:
Installed Capacity:

Sub Array 1
Module Orientation:
Module Pitch:
# of Modules in series per string:
System Operating voltage:
System Operating current:
# of strings:

Grid Connection
Bidirectional Meter:
Reverse power blocking:
SANS 10142-1 Complient:
NRS 097-2-3 Complient:

Fire Safety
Smoke and Heat Extraction:
Firewalls and Compartments:
Warning Signs Installed:
Other:

Lightning and Surge Protection
Risk assessment (SANS 62305-2):

Building without lightning Protection
Additional External Protection:
Equipotential Bonding:
Type 2 DC surge arrestor:

OR

Building with lightning Protection
PV System within protection:
Seperation Distance Kept:
Equipotential Bonding:
Type 2 DC surge arrestor:
Type1&2 combination arrestor:

OR

Metal Substructure ties to protection:
Type 1 DC lightning arrestor:
Type 2 DC surge arrestor:
Type1&2 combination arrestor:
Notes:

Electrical Safety
Com s with ables and Standards:
DC Inst tion P ction:
UV and We erproof cables:
Cable protection:
able DC Components:
N

Wind Loads (Roof Mounted Systems)
Load Bearing Assessment:
Aging Condition Assessment:
Anchoring and Load Application:
Roof Penetration:
Height of Building:
Wind Speed Assumption:
Wind Zone Load:
Edge Distance:
Roof Ridge:
Eaves:
Notes:

Commissioning
Date of installation:
Date of First Commissioning :

Disclaimer:

Note: This is a declaration that the PV system described in this document was installed according to current industry best practice standards. This document comprises this cover sheet and Annex 1

sample

Annexure B - Application Form

Assessment Centre Application Form				
Assessment Centre Information				
* **Note:** Please include pictures of your facilities and the equipment				
Centre Name				
Address				
Number of Staff				
Type of Institution		**Government**		**Private**
Available Facilities		**Yes**		**No**
Solar PV Equipment		**Yes**		**No**
Setup complete according to guidelines		**Yes**		**No**
Personnel Information				
* **Note:** Please also attach the full CVs of all personnel. If you have more than one in each category, please indicate same.				

	Subject Matter Expert	**Assessor**	**Moderator**
Full Name			
ID Number			
Qualifications			
Training Experience			
Solar PV Experience			

Note: Please complete with the most relevant up to date information. Applicants who submit this application form could be contacted for further information and be engaged during the site visit *You are required to sign and return the Terms and Conditions with this application.

Annexure C - QCTO recommended Roof space

The Roof has to be big enough to mount 8 modules. Overall height of 3m must not be exceeded to avoid having to comply with working in heights regulations according to OHS act. Floorspace (2m safety distance in all directions) / approx. 100m²

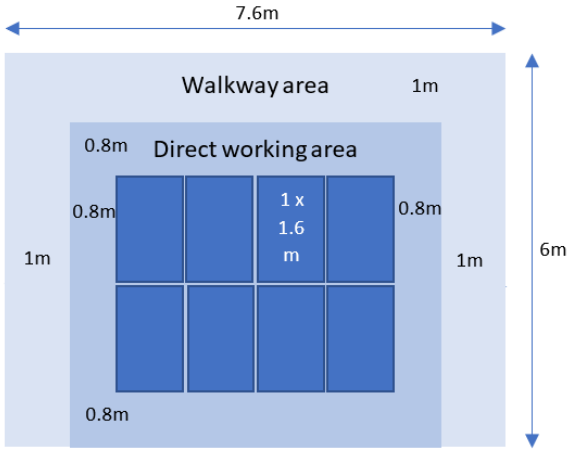


FIGURE 1: ROOF BIRD VIEW

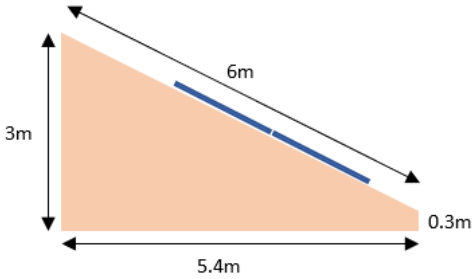


FIGURE 2: ROOF SIDE VIEW

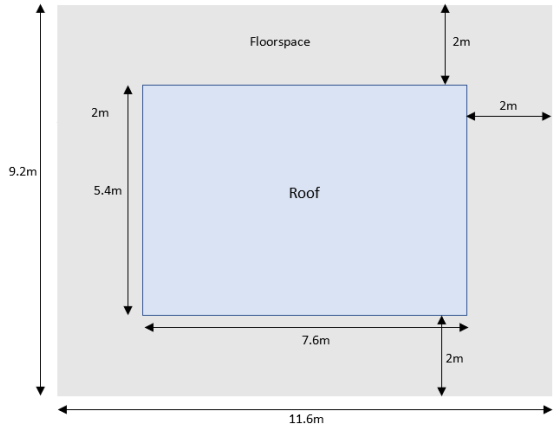


FIGURE 3: ROOF AREA FLOOR PLAN

Annexure D - Assessment centre criteria for a QCTO recognised qualification.

- QCTOs_ Policy on Accreditation of Assessment Centres.pdf
- Assessment Centre Accreditation Minimum Criteria2.pdf

Annexure E - Course instructions

The 2-day PV GreenCard Assessment for PV installers includes a theoretical as well as a practical assessment where candidates are required to mount PV installations on a simulated roof environment. The purpose of this assessment is primarily to ascertain the competency of installers and vet their abilities to gain access to the PV GreenCard program.

Participants should be trained/experienced PV installers familiar with the attached documents, SANS 10142-1, NRS-097 and the SAPVIA Solar PV installation Guideline.

Please also always check the PV GreenCard page for updates: https://www.pvgreencard.co.za.

The attached assessment criteria are as a guideline for what you can expect in the PV assessment and how it fits in the overall PV Installer program. This is taken from the full qualification document available on the Quality Council for Trades and Occupations (QCTO) website and can be accessed here.

To adhere to South African assessment standards can you please provide me with the following on or before the date of your assessment.

- Copy of ID (please also bring your ID with on both days of the assessment)
- CV
- Certificates

Failure to present your ID on the day of assessment will disqualify candidates from taking part.

Annexure F - Assessment Schedule with Instructions

Day 1 - Theoretical Assessment			
Registration	30 min	PRINTS - Attendance register - Name and ID list - Attendance list - prepare exam room	Welcome the participants and seat them in the exam room. Make sure that all participants signed the lists and left a copy of their ID card
Introduction - Introduction of the PV Assessment - Registration, requirements and registration process	30 min		Welcome and Introduction • make sure that all participants signed the lists and left a copy of their ID card. Present the Assessment centre Background and Introduction PV Assessment.
Theoretical Assessment	180 min	PRINTS	3h time limit, no material allowed, no extra paper.
3 h theoretical exam with the following main topics:		- Theory Assessment Question Paper	Only calculator, pen and ruler are allowed on the table
- Electrical Fundamentals		- Theory Assessment Answer Paper	Hand out the exam and ask the participants to complete the cover sheet
- Solar PV Fundamentals		- Theory Assessment Evaluation (Excel)	all candidate to start at the same time and finish at the same time
- Site Inspection			Min 2 assessors per room have to observe the assessment

- Solar PV System Design			Evaluation and results within 7 days
- Solar PV Installation			Results to be scanned and stored
- SANS 10142			
- Inspecting and Testing			
Introduction to Practical Assessment		PRINTS	Indemnity Form
- Health and safety introduction		- Practical Assessment Registration List	Explain Safety Instruction. Handout the indemnity form and have participants sign them.
- Grouping of the participants in assessment teams	30min	- Grouping Slips	
- each group will work on one PV system installation		- Indemnity Form	
- different group can works on different roof (tile/corrugated steel)		- Tool material list	
- Discussion of the tool list		- Prepare roofs	
Day 2 - Practical Assessment			
Practical Assessment		- Tool List	Roof preparation
- Each participant gets the practical assessment form		- Practical Instructions	- each roof has 3 modules with mounting and wiring pre-installed
- each participant has to prepare material list, wiring diagram		- Datasheets	- the installation contains the following mistakes:
- Each team has to work on the installation	315 min	- Practical Assessor Mark Sheets	Tiled roof
- teams will find 50% modules already installed		- prepare roofs with preinstalled modules	1. Roof hook shim left out
- Each individual has to find installation mistakes on the preinstalled modules			2. loose middle clamp between middle and third module (right side)

- Each group has to finalise the installation of the PV system including inverter connection			3. Solarflex cable bend radius too tight
			4. Solarflex touching the backing sheet
			Seamed roof and corrugated sheet metal roof
			1. Hanger bolt securing nut left off completely on a lower row near the middle (not so easy to see)
			2. loose middle clamp between middle and third module (right side)
			3. Solarflex cable bend radius too tight
			4. Solarflex touching the backing sheet
Feedback and Evaluation	30 min	- Feedback and Evaluation Form	Open Feedback
			- Ask the participants if the assessment met their expectations and if they have any comments and or suggestions what to change
			Results
			- Explain the marking process and when to expect results
			Feedback Form
			- Hand out the feedback form and ask the participants to complete it
The assessor and subject matter experts work with the "Practical Assessment Mark Sheet" and its addendum. <u>One per participant has to be completed.</u>			

Annexure G - Solar PV Installer Assessment Results (example)

Name of the Candidate:

Theoretical assessment

#	Section	max marks	marks scored (example)	percentage
1	ELECTRICAL FUNDAMENTALS	28	25.00	89.29%
2	SOLAR PV FUNDAMENTALS	41	38.50	93.90%
3	SITE INSPECTION	21	18.00	85.71%
4	SOLAR PV SYSTEM DESIGN	4	4.00	100.00%
5	SOLAR PV INSTALLATION	14	12.00	85.71%
6	SANS 10142	13	10.00	76.92%
7	INSPECTING AND TESTING	16	9.00	56.25%
	TOTAL	**137**	**116.50**	**85.04%**

Result theory part: **competent**

Practical assessment

#	SECTION	max marks	marks scored	percentage
A	MATERIAL LIST (INDIVIDUAL)	10	10	100.00%
B	WIRING DIAGRAM (INDIVIDUAL)	14	9	64.29%
C	ERRORS ON PRE-MOUNTED INSTALLATION (INDIVIDUAL)	10	10	100.00%
D	INSTALLATION WORK (GROUP)	20	17	85.00%
E	QUALITY OF WORK (GROUP)	24	22	91.67%
F	SOLAR PV CIRCUITS (DC) (GROUP)	14	14	100.00%
G	SOLAR PV CIRCUITS (AC) (GROUP)	11	10	90.91%
I	DISTRIBUTION BOARD (GROUP)	10	8	80.00%
H	SAFETY IN THE WORKPLACE (OBSERVATION)	10	9	90.00%
J	USE OF MATERIALS AND TOOLS (OBSERVATION)	10	10	100.00%
K	ROOF MARK SHEET (diamond and corrugated roof 25, tiled roof 31 normalized to 25)	25	20	80.00%
	TOTAL	**158**	**139**	**87.97%**

Result practical part: **competent**

Overall assessment

		max marks	marks scored	validated percentage
	THEORETICAL ASSESSMENT	137	116.5	39.5%
	PRACTICAL ASSESSMENT	158	139	47.1%
	Overall assessment	**295**	**255.5**	**86.6%**

Result overall assessment: **competent**

Above result is based on a weighting of 42% for the theoretical and 58% for the practical part in line with the QCTO qualification

Recommendation:

Well done on your theoretical and practical competency.

Terms and Conditions

The South African Photovoltaic Industry Association (SAPVIA) grants the status of Accredited Assessment Centre to qualifying parties. Each Assessment Centre and its designated representatives hereby acknowledge and agree to comply with the Terms and Conditions contained herein for the period the Assessment Centre hold its designation.

1. ASSESSMENT CENTRE BUSINESS PRACTICES:

1.1 Assessment Offering

For the term of the accreditation issued by SAPVIA, the Assessment Centre agrees to offer PV GreenCard Assessment substantially consistent with the Application Information approved by SAPVIA and agrees to notify SAPVIA of any deviations from the assessment offered, including format change, delivery plan and/or methods 10 days prior to such changes.

1.2 Assessment Centre licencing fees payable to SAPVIA

For the term of the accreditation issued by SAPVIA, the Assessment Centre operating entity agrees to pay an annual licencing fee per accredited assessment centre in operation. The Assessment Centre licencing fee will be communicated annually to all Assessment Centre operating entities.

1.3 Assessor and Moderator's Qualifications

Instructors, Assessors and Moderators' qualifications and skills have to comply and adhere to requirements as provided in the Assessment Centre Guidelines.

1.4 PV GreenCard Assessment Certification

The Assessment Centre agrees to offer and administer the PV GreenCard Assessment in a manner consistent with the procedures described in the Assessment Centre Guideline and in accordance with the Accredited Entity Assessment Programme, in addition to other applicable Assessment administration documentation provided to the Assessment Centre. SAPVIA will provide Assessment Centres with the final most up to date versions of the required documents. To ensure an open and transparent market, SAPVIA will not prescribe a pricing to the Assessment and will leave this up to the individual Assessment provider.

The facility needs to be suitably staffed and equipped to offer the PV GreenCard Installer Assessment. SAPVIA could at any time conduct a site visit to ensure the standard of Assessment is being maintained. Assessment Providers need to supply SAPVIA with their Assessment institution logo, relevant person's contact details and a 100 word write up for the PV GreenCard website. Should you have available dates for upcoming Assessment, this will also be included on the website as acquired. To ensure we keep track of the Assessment, it is requested that within 10 days of the successful completion of the Assessment session; you provide SAPVIA with a list of all participants undertaking the Solar PV installer course with contact details



The Assessment Centre acknowledges the content of the PV GreenCard Assessment are proprietary information owned by SAPVIA and shall therefore not be copied or reproduced or

utilized in any manner not described within the Guideline or in any associated documentation referenced herein.

Assessment Centres are expected to submit an Assessment Register of the assessment attendees to SAPVIA on a monthly basis.

Assessment Certificates will ONLY be issued by SAPVIA. Certificates will only be issued to qualifying candidates, who have successfully completed the Assessment. Assessment Centres may NOT issue candidates with attendance certificates for the 2 day PV GreenCard Assessment.

2. ASSESSMENT CENTRE TERMS AND CONDITIONS:

2.1 Prospective Assessment centre operators need to apply to become a registered PV GreenCard Assessment centre. The application should include pictures of the facilities, equipment and CVs of the human resources, as well as any other documentation SAPVIA may request to reconfirm verification of the Assessment Centre criteria.

2.2 The Assessment Centre applicant understands and agrees that SAPVIA will conduct a due diligence process to verify the information provided in the Assessment Centre application. Third parties may be contacted to confirm the information provided in the application. The Assessment Centre applicant waives any claims against SAPVIA for breach of privacy or confidentiality during this verification process that could arise from the good faith verification activities and/or any other investigation that SAPVIA conducts as SAPVIA determines in its sole and absolute discretion.

2.3 In the event of any changes pertaining to Assessment Centre, including but not limited to change in ownership, contact information or any other substantive changes to the information provided within the Application Information by the Assessment Centre, the Assessment Centre shall provide SAPVIA electronic mail notice of such changes within thirty (30) days of such changes.

2.4 The Assessment Centre agrees that SAPVIA, in its sole discretion, may publicly list the Assessment Centre on the SAPVIA website and social media. Listing may include a link to the Assessment Centre website, along with other non-confidential information associated with the Assessment Centre.

2.5 Assessment centre acknowledges that it will abide by and uphold the terms and conditions of the SAPVIA Agreements listed herein and the standards of the SAPVIA Code of Conduct.

2.6 The Assessment Centre applicant affirms, that all information provided in the application for Assessment Centre Accreditation is correct and complete.

3. GENERAL TERMS AND CONDITIONS:

3.1 Disclaimer of Warranties

SAPVIA provides any and all services and information “as is” basis and grants no warranties of any kind, express, implied or statutory. SAPVIA specifically disclaims any implied warranties of merchantability, fitness for a particular purpose, or non-infringement.

3.2 Indemnity

The Assessment Centre agrees to defend, indemnify and hold SAPVIA, or its employees and affiliates harmless against any losses, expenses, costs or damages arising from, incurred as a result of, or in any manner related to any claim or action resulting from gross negligence by the Assessment Centre.

3.3 Non-Disparagement

You agree that you will not publish on the Internet, directly or indirectly, any statement about SAPVIA or the PVGC Programme, SAPVIA and PV GreenCard Programme or any agent thereof that is defamatory.

3.4 Governing Law

This Agreement shall be governed in accordance with the laws of the Republic of South Africa, notwithstanding any conflict-of-law provisions to the contrary.

3.5 Class Action Waiver

You hereby agree to waive any class action proceeding or counterclaim against SAPVIA, its affiliates, successors or assigns, whether at law or equity, regardless of which party brings suit. This waiver shall apply to any matter whatsoever between the parties hereto which arises out of or is related in any way to this Agreement or the Services, the performance of either party.

3.6 SAPVIA's Remedies

In the event of a breach or threatened breach by you of any of the provisions of this Agreement pertaining to intellectual property, disparagement, or unauthorized use of the Assessment, you hereby consent and agree that SAPVIA shall be entitled to obtain, as a matter of right hereby granted, a temporary or permanent injunction or other equitable relief against such breach or threatened breach, without the necessity of showing any actual damages or that monetary damages would not afford an adequate remedy.

3.7 Assignability

This Agreement is personal to you, and you may not assign this Agreement or the rights and obligations hereunder to any third party.

3.8 Survival of Terms

Any provision of this Agreement which by its nature must survive the termination of this Agreement in order to give effect to its meaning shall survive such termination, including but not limited to the ownership, intellectual

4. ACKNOWLEDGEMENTS:

4.1 I understand that SAPVIA PVGC Programme is not, nor is affiliated with, a governmental agency, and that the Solar PV Industry is not regulated by any authority.

4.2 SAPVIA's PV GreenCard Accreditation(s), Certification(s) and Bodies of Knowledge are voluntarily adopted by professionals in the Solar PV Industry.

4.3 I understand that when SAPVIA uses terms such as "Industry", "The Industry", "Industry Standard", "International Best Practice", "Generally Accepted" and other generalized terms, the terms are meant as a generalization of SAPVIA's characterization of what it believes to be the industry standard and/or majority view of what constitutes the industry standard.

4.4 I understand that SAPVIA endeavours to represent the voice of the industry's majority, and that because it is not practical to survey and interview every organization and professional involved in Solar PV Industry, SAPVIA has used reasonable methods and efforts to define and establish Solar PV Installation standards for the purpose of supplying the industry with standards that are viable and practical minimum competency standards.

4.5 I understand that my engagement with SAPVIA, as described herein, constitutes my agreement with alignment towards and support of, the PV GreenCard Programme standards, and I will use my best efforts, judgment and actions to uphold and defend these standards.

4.6 I understand and agree that SAPVIA maintains the right to modify all Terms and Conditions herein as it deems necessary from time to time without notice, and that it is my responsibility to review all Terms and Conditions on a regular basis.

4.7 I understand and agree that the following are incorporated into and made a part of this Agreement:

5. PV GREENCARD ASSESSMENT CENTRE CODE OF CONDUCT

5.1 SAPVIA is a voluntary, member organization that is dedicated to promoting Solar PV and suitable levels of Skills Development requirements and Installation Best Practice, therefore demanding the highest professional and personal conduct by its Assessment Centre Partner.

5.2 All Assessment Centres of PV GreenCard Programme are expected to demonstrate such conduct in all dealings with employers, customers, clients, colleagues and the general public. Personal interest or advantage must at all times be secondary to those of others.

5.3 SAPVIA recognizes that a professional accreditation and certification creates an expectation in the community that the Assessment Centre Partner will discharge professional responsibilities with integrity, objectivity, due care and genuine interest. At all times these professional responsibilities must respect the confidentiality as agreed by the parties involved in the delivery of such services.

5.4 Reports that Assessment Centre Partners are suspected of breaching this Code of Conduct will be reviewed and investigated. The Assessment Centre Partner in question will be contacted and will be given the opportunity to fully respond to the potential breach. Proposed action may include censure, suspension or termination of the Partnership. Any proposed action will be subject to the SAPVIA/ PV GreenCard Appeals procedure.

5.5 Reports of Breaches of Code of Conduct

Any Report of conduct that could reasonably construed as violating the SAPVIA/ PV GreenCard Programme Code of Conduct will be assigned to SAPVIA for investigation. Immediately upon referral, a letter of notice will be sent to the alleged violator with a summary of the reported violations. SAPVIA will maintain full confidentiality regarding the allegations during the investigation period. During such investigation SAPVIA will strive to protect the identities of the parties involved to the extent reasonably possible within the investigation process.

5.6 Investigation of Reports of Breach

The investigation process will be thorough and impartial. It will be the objective of SAPVIA to complete the investigation with a period of sixty days. This timeline may not be possible if the alleged violator refuses to cooperate in the investigation. The findings of the investigation shall be in writing.

5.7 Levels of Severity for Breach

The severity of the level of breach of the Code of Conduct shall determine the proposed restrictions to be imposed on the violator. Each situation will be evaluated separately. Restrictions can range from a letter of warning, criticism, suspension or termination.

5.8 Proposed Restrictions and Penalties for Breach

Warning – In the event the breach is determined to be minor and potentially unintentional, written warning will be issued to the Assessment Centre. Evidence of corrective measures will be adequate to avoid any further actions. It will not be made public.

Condemnation – A breach of a serious nature that is suspected of being done intentionally; a letter of condemnation will be issued. The censured Assessment Centre will be given the opportunity to correct the conduct – failure to promptly address the issue will result in posting of such action on the SAPVIA website.

Suspension – A serious breach and failure to promptly correct the breach will result in a suspension of the SAPVIA designation for a period of up to 90 days. Corrective action will allow for a reinstatement of Assessment Centre designation.

Termination – Failure to correct a serious breach of the Code of Conduct after a period of suspension will result in a termination of the Assessment Centre designation.

6. LOGO USAGE POLICY

6.1 Associated with the Accreditation and Certification Designations are Logos. Upon an individual or entity's achievement of a Designation, the appropriate Logo may be used on stationary, promotional material and websites. Logos must be used in the exact configuration and colorization as shown in Schedule A – Logo.

6.2 Assessment Providers need to make a formal request for use to both the SAPVIA and PV GreenCard logos in advertising the Solar PV Installer Assessment course. SAPVIA reserves the right to deny any use of the Logos it determines to be inconsistent with the objectives of SAPVIA in its sole discretion.

SAPVIA

South African Photovoltaic Industry Association

PVGreenCard

Powered by SAPVIA

South African Photovoltaic Industry Association



7. Point of Contact

7.1 For any questions, queries and any other matter and support required, please contact info@sapvia.co.za