

NATIONAL SKILL QUALIFICATION FRAMEWORK QUALIFICATION FILE

Version 6: Draft of 01 September 2016

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

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List of documents submitted in support of the Qualifications File

1. Qualifications Pack
2. Industry Validations letters
3. Industry Endorsement tracker
4. Integrated Occupational Map
5. Summary Sheet

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SUMMARY

Qualification Title	Solar PV Designer
Qualification Code	QP SGJ/ 0110
Nature and purpose of the qualification	Nature of the qualification - A qualification pack The main purpose of the qualification - This Qualification will enable the individual to specialize in the designing of the solar PV power plant
Body/bodies which will award the qualification	Skill Council for Green Jobs
Body which will accredit providers to offer courses leading to the qualification	Skill Council for Green Jobs
Body/bodies which will carry out assessment of learners	Affiliated Assessment Agency of SCGJ
Occupation(s) to which the qualification gives access	Solar PV Designer
Licensing requirements	N/A
Level of the qualification in the NSQF	Level 7
Anticipated volume of training/learning required to complete the qualification	200 hours
Entry requirements and/or recommendations	B. Tech/ B.E. (Solar/ Electrical, Electronics, Civil, Mechanical/ Energy Systems) with 3 years of solar PV experience for B. Tech and M. Tech (Solar/ Renewables/Energy Studies)
Progression from the qualification	Vertical Progression - Project Head (Level 8) Horizontal Progression - Solar PV Project Manager/ Solar Proposal Evaluation Specialist
Planned arrangements for the Recognition of Prior learning (RPL)	SCGJ recognizes that there may be candidates who have prior learning experience in the Renewable Energy Sector and are desirous of being certified. - Propose to carry out RPL for candidates working in Solar, Banking or Project Finance organizations. - A bridge course would be conducted for people who are working in solar industry. - Linking of this Qualification to Start Up India
International comparability where known	This Level 5 qualification compares with UK NOS: Level 3 UK NOS: Pro Skills Sector Skill Council PROST06. PROST07
Date of planned review of the qualification.	30 th September 2019

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Formal structure of the qualification			
Title and identification code of component.	Mandatory/ Optional	Estimated size (learning hours)	Level
SGJ/ N0128 Review the structural design of solar PV power plant	Mandatory	70	7
SGJ/ N0129 Review the electrical design of solar PV power plant and the energy simulation report	Mandatory	90	7
SGJ/ N0106 Maintain personal health & safety at project site	Mandatory	20	2
SGJ/ N0120 Work effectively with others	Mandatory	20	4

Please attach any document giving further detail about the structure of the qualification – e.g. a Curriculum Document or a Qualification Pack.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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SECTION 1 **ASSESSMENT**

Body/Bodies which will carry out assessment:

Affiliated Assessment Agency of SCGJ

How will RPL assessment be managed and who will carry it out?

The RPL assessment will be carried out through pre assessment, identifying the skills gaps, provide bridge training to cover the competency gap, where required, and then conduct final assessment of the candidates.

Confederation of Indian Industry (CII) or any other Affiliated Assessment Agency of SCGJ, as per RPL Policy and Guidelines

Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

The emphasis is on examination of existing businesses through case study analysis and practical demonstration of skills and knowledge based on the performance criteria.

The assessment papers are developed by Subject Matter Experts (SME) available with the Assessment Agency, in collaboration with Skill Council for Green Jobs, as per the performance and assessment criteria mentioned in the Qualification Pack. The assessments papers are also checked for the various outcome based parameters such as quality, time taken, precision, tools & equipment requirement etc. The assessment sets are then reviewed for consistency. The technical limitations at the training centres are taken care in theory and viva.

The assessment agencies are instructed to hire assessors with integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments. The assessment agencies are instructed to identify assessors as per the Assessment Policy and Guidelines established by Skill Council for Green Jobs relevant for that Qualification.

The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to SCGJ Assessment Framework, competency based assessments, and assessors guides. The assessors are provided with assessors guide developed by the Subject Matter Expert of the assessment agency in collaboration with SCGJ as per the assessment framework. The assessment guides are developed to ensure the maximum possible consistency in the assessment by different assessors and elaborate on the following

- Qualification Pack Structure
- Guidance for the assessor to conduct theory, practical and viva assessments
- Guidance for trainees to be given by assessor before the start of the assessments.
- Guidance on assessments process, practical brief with steps of operations practical observation checklist and mark sheet
- Viva guidance for uniformity and consistency across the batch.

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The assessment by assessment agency is completely based on the assessment criteria as mentioned in the Qualification Pack. Each NOS in the Qualification Pack (QP) is assigned a relative weightage for assessment based on the criticality of the NOS. Therein each Performance Criteria in the NOS is assigned marks for or practical based on relative importance, criticality of function and training infrastructure.

The following tools are proposed to be used for final assessment:

Practical Assessment: This will comprise of a test to evaluate the individual's grasp on domain skills imparted.

Viva/Structured Interview: This tool will be used to assess the conceptual understanding and the behavioural aspects as regards the job role and the specific task at hand. It will also include questions to ascertain the soft skills of interacting with the customer or client.

Written Test: Under this test few key items which cannot be assessed practically will be assessed. The written assessment will comprise of:

- True / False Statements
- Multiple Choice Questions
- Problem Statements
- Case Study Analysis

Please attach any documents giving further information about assessment and/or RPL.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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ASSESSMENT EVIDENCE

Complete a grid for each component as listed in “Formal structure of the qualification” in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – i.e. Learning Outcomes to be assessed, assessment criteria and the means of assessment.

Title of Component: Solar PV Designer

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Solar PV Designer

Qualification Pack SGJ/ Q0110

Sector Skill Council Green Jobs

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Assessment Outcomes	Assessment Criteria for outcomes	Total Marks	Marks allocation		
			Out of	Theory	Skills Practical
SGJ/N0128 Review the structural design of Solar PV Power Plant	PC1. Study the soil test reports, water table depth report and the pull test data to ensure design meets the requirement	100	12	5	7
	PC2. Review the overall plant layout		6	3	3
	PC3. Review the layout for solar field compound wall /entry gate		4	2	2
	PC4. Review the layout for in plant roads with material specifications		4	2	2
	PC5. Review the design for water distribution network inside the plant		6	3	3
	PC6. Review the design for water drainage system		4	2	2
	PC7. Review the design for pathways between		4	2	2

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	the solar arrays				
	PC8. Review the design for the foundation for mounting solar PV panel support structure		4	2	2
	PC9. Review the design for the tilt brackets and mounting frames for solar panels with fastening arrangement		4	2	2
	PC10. Document the details of RCC foundation, plan of the inverter room		2	1	1
	PC11. Document the details of the bolt ,base plates etc. used in structure, foundation of inverter and control room		2	1	1
	PC12. Document the transformer foundation details		2	1	1
	PC13. Document the foundation and design details of the control room		2	1	1
	PC14. Review the design plan for earthing pits		3	1	2
	PC15. Review the design plan for lightning arrester foundation		3	1	2
	PC16. Review the design plan for street light foundation		3	1	2
	PC17. Review the structural design for plant switchyard as per the grid code and transmission authority regulations		6	2	4
	PC18. Review the foundation plan for the transmission tower		4	1	3
	PC19. Review the design for structure of the transmission tower		4	1	3
	PC20. Review the design for stub and cleats of transmission tower		4	1	3
	PC21. Review the design for corridor of transmission line		4	1	3
	PC22. Review the foundation design for module mounting structures such that the dead and dynamic loads on modules are transferred to the beam and columns of the building		5	2	3
	PC23. Review the design for walk ways for maintenance of modules and system		4	1	3
	PC24. Review the design for movable mounting structure for canal top plant to increase output		4	1	3
		TOTAL	100	40	60
SGJ/N0129 Review the electrical design of solar PV power plant and the energy simulation report	PC1. Analyse the availability of shadow free space available	100	4	1	3
	PC2. Analyse the global solar irradiation at the site		4	1	3
	PC3. Workout the capacity of the solar power plant		4	2	2
	PC4. Select solar module technology and size, based on analysis of cost, power output, quality, climatic conditions of the site, global and diffused irradiance ratio at the site etc.		6	2	4
	PC5. Workout the total numbers of modules based on the total capacity of the plant and the capacity of selected modules		4	2	2
	PC6. Review earthing design of solar module arrays		4	2	2
	PC7. Select inverter, based on compatibility with module technology, compliance with		4	2	2

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	grid code and other applicable regulations, reliability, system availability, serviceability, quality, cost, DC TO AC conversion efficiency			
PC8.	In case of a roof top power plant, decide on specifications of the inverter to power the AC loads in the building	4	2	2
PC9.	Decide on number of inverters to be used based on the capacity and specifications of the inverter selected	2	1	1
PC10.	Finalize the inverter layout and inverter locations on the basis of total capacity	4	1	3
PC11.	Review the earthing design of inverters	2	1	1
PC12.	Workout number of modules in a string based on the input voltage and MPPT voltage range of the inverter	2	1	1
PC13.	Workout number of strings connected to a combiner box based on minimum run of DC connecting cables to minimized DC losses	2	1	1
PC14.	Finalize the inter space between the solar modules on the basis of minimum inter row shading, adequate space for cleaning and maintenance of solar modules and the tilted to south at an angle that optimizes the annual energy yield	4	2	2
PC15.	Specify DC cabling material, size, type of PVC for cables connecting modules, junction boxes to the combiner boxes and combiner boxes to the inverter panels etc.	4	1	3
PC16.	Review the specification of DC connectors (plugs and sockets) to be used	2	1	1
PC17.	Review the design specifications for junction boxes/combiner including IP number	2	1	1
PC18.	Review the specifications for disconnects/switches	4	2	2
PC19.	Workout number of combiner boxes connected to one panel of the inverter based on the input current rating of the inverter	2	1	1
PC20.	Review islanding facility for grid connected power plant, in case of non-availability of grid	4	2	2
PC21.	Protect incorrect polarity, over-voltage and overload for the DC cables	4	1	3
PC22.	Decide on specification of charge controller/ inverter to control the overcharging/ discharging of batteries	4	2	2
PC23.	Select the suitable simulation software	1	1	0
PC24.	Feed the parameters in the software basis on the electrical design	4	1	3
PC25.	Prepare the energy simulation report	6	1	5
PC26.	Analyse the energy simulation report and provide to superiors	5	2	3
PC27.	Decide the storage battery capacity (AH) based on the number of days autonomy required (KWH/WH) and the depth of discharge of the battery bank	4	2	2
PC28.	Decide on the specifications for the charge controller/ inverter to control the	4	1	3

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	overcharging/discharging of the batteries, prepare energy generation report using simulation software				
		TOTAL	100	40	60
SGJ/ N0106 Maintain personal health & safety at project site	PC1. identify corporate policies required for workplace safety	50	2	1	1
	PC2. identify requirements for safe work area and create a safe work environment		3	2	1
	PC3. identify contact person when workplace safety policies are violated		1	1	0
	PC4. provide information about incident/violation		1	1	0
	PC5. identify the location of first aid materials and administer first aid		2	1	1
	PC6. identify the personal protection equipment required for specific locations on-site		3	2	1
	PC7. identify expiry dates and wear & tear issues of specified equipment		2	1	1
	PC8. demonstrate safe and accepted practices for personal protection		3	2	1
	PC9. identify environmental hazards associated with the project site		2	1	1
	PC10. identify electrical hazards		4	2	2
	PC11. identify personal safety hazards or work site hazards and mitigate hazards		4	2	2
	PC12. select tools, equipment and testing devices needed to carry out the work		4	2	2
	PC13. demonstrate safe and proper use of required tools and equipment		4	2	2
	PC14. check access from ground to work area to ensure it is safe and in accordance with requirements		2	1	1
	PC15. reassess risk control measures, as required, in accordance with changed work practices and/or site conditions and undertake alterations		2	2	0
	PC16. inspect/install fall protection and perimeter protection equipment ensuring adequacy for work and conformance to regulatory requirements		4	2	2
	PC17. identify approved methods of moving tools and equipment to work area and minimize potential hazards associated with tools at heights		2	1	1
	PC18. select and install appropriate signs and barricades		2	1	1
	PC19. place tools and materials to eliminate or minimize the risk of items being knocked down		1	1	0
	PC20. dismantle plant safely in accordance with sequence and remove from worksite to clear work area		2	1	1
		TOTAL	50	29	21
SGJ/ N0120 Work effectively with others	PC1. Accurately pass on information to the authorized persons who require it and within agreed timescale and confirm its receipt	100	4	2	2

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	PC2. Assist others in performing tasks in a positive manner where required and possible		4	2	2
	PC3. Consult and assist others to maximize effectiveness and efficiency in carrying out tasks		4	2	2
	PC4. Display appropriate communication etiquette while working		6	3	3
	PC5. Display active listening skills while interacting with others at work		4	2	2
	PC6. Demonstrate responsible and disciplined behaviors at the workplace		4	2	2
	PC7. Escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		3	1	2
	PC8. Identify the need for common grounds with clients, team members, etc. and negotiate in an effective manner to achieve the same		3	1	2
	PC9. Consider and respect the opinions, creativity, values, beliefs and perspectives of others		4	2	2
	PC10. Ensure collaboration and group participation to achieve common goals		6	3	3
	PC11. Promote a friendly, co-operative environment that is conducive to employee's sense of belonging		4	2	2
	PC12. Facilitate an understanding and appreciation of the differences among team members		4	2	2
		TOTAL	50	24	26

Means of assessment 1

Means of assessment 2

Pass/Fail

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SECTION 2 **EVIDENCE OF LEVEL**

Awarding bodies will enter a proposed NSQF level for the qualification in the Qualification File Summary. This section asks for the evidence on which that proposal is based. The evidence must refer to the level descriptors of the NSQF.

NSDA recommends an approach to working out the level of qualifications which starts with the level descriptor domains (Process, Professional knowledge, Professional skill, Core skill and Responsibility: see annex A). Two variants for providing the evidence of level are offered here: Option A and Option B in the following pages. Awarding bodies should choose the option which best suits the qualification.

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OPTION A

Title/Name of qualification/component: Solar PV Designer		Level: 7	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process	<p>The individual is expected to ensure that the structural and electrical design for the solar PV power plant is prepared. Further basis the designs, s/he will create the energy simulation report for the solar PV power plant.</p>	<p>The role demands wide range of specialized theoretical skill for reviewing the overall structural layout of the plant, reviewing the assumptions made by the structural design engineer for preparing the structural design, ensuring the specifications are as per industry standards, ensuring that the structural design is as per the findings of site survey report, working out the capacity of the solar PV power plant by analysing radiation data, selecting the type and number of solar modules, inverters, batteries (if required) technology based on conditions at site, etc. and specialised practical skills such as designing the earthing system, designing the inverter layout, designing the interconnection between strings, inverters, etc. including the specification of the materials to be used for cabling, connectors, switchgears, etc. and preparing the energy simulation report for the solar PV power plant by using appropriate simulation software. The above work requires the role incumbent to work in variable contexts as the parameters from site to site differ.</p> <p>Considering that all the above mentioned outcomes are related to wide range of specialized theoretical and practical skill involving variable routine and non-routine contexts, the job role is pegged at level 7.</p> <p>Since the individual's scope of work is not limited to wide range of specialised technical skill and clarity of knowledge and practice in broad range of activity involving standard and non-standard practices but even encompasses wide range of specialized theoretical and practical skills such as ensuring the structural design is aligned to the site survey</p>	7

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Title/Name of qualification/component: Solar PV Designer		Level: 7	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
		<p>report, ensuring that the specification of components are as per industry standards, deciding of the solar PV power plant output based on the solar radiation data, preparing the overall energy simulation report, etc. the role can't be placed at level 6.</p> <p>And as the job holder doesn't require to have comprehensive, cognitive, theoretical knowledge and practical skills to develop solutions to abstract problems such as designing new solar PV solutions, etc. the role cannot be placed at 8.</p>	
Professional knowledge	<p>The individual is expected to exhibit the knowledge of the site survey reports, availability of shadow free space, solar resource assessment data, structural designs for various components like mounting structures, inverters, etc. and structural design software like PVSYS, etc., efficiency, cost and specifications of various components like modules, inverters, transformers, electrical design software, energy simulation software and parameters.</p>	<p>The job holder is expected to wide ranging factual and theoretical knowledge in field of study such as solar energy generation concepts, site survey reports and their evaluation parameters, solar resource assessment data, its interpretation and usage for computation of , design, efficiency, cost and typical specifications for various structural and electrical components of a solar PV power plant like solar modules, inverters, cable materials, interconnections, switchgears, mounting structures, foundations, etc., working and usage of various design software available like PVSYS, PV(SOL), etc., working and parameters of energy simulation software, etc.</p> <p>Since all of the mentioned knowledge are related to factual and theoretical in the field of solar PV designing as a whole, not just site surveying, the individual can be placed at level 7.</p> <p>The Job holder is expected to possess wide ranging factual and theoretical knowledge in field of study, which includes the knowledge of site surveying, civil designing, electrical designing and energy modelling. Therefore s/he can't be placed at level 6.</p>	7

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Title/Name of qualification/component: Solar PV Designer		Level: 7	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
		<p>And as the job holder is not expected to have comprehensive, cognitive and theoretical knowledge for developing solutions to abstract problems such as managing the project installation, maintenance, etc. the role cannot be placed at level 8.</p>	
Professional skill	<p>The individual is expected to plan & organize the schedule for all site survey, design activities, etc. S/he must possess analytical ability to prepare the energy simulation report taking into account the site survey reports, solar irradiation data, etc. Further s/he must be able to take decisions on a regular basis, manage relationship with customers and superiors and apply domain knowledge to prepare the structural and electrical design and the energy simulation report for the solar PV power plant.</p>	<p>The job holder expected use a wide - range of cognitive such as analysing the site survey and soil test reports, analysing the solar resource and weather data, ensuring the structural design is as per site survey report findings, ensuring the assumptions made for designing is as per industry standards, working out the capacity of the solar PV power plant by analysing radiation data, selecting the type and number of solar modules, inverters, batteries (if required) technology based on conditions at site, etc. and practical skills such as such as designing the earthing system, designing the inverter layout, designing the interconnection between strings, inverters, etc. including the specification of the materials to be used for cabling, connectors, switchgears, etc. and preparing the energy simulation report for the solar PV power plant by using appropriate simulation software and generate solutions to specific problems pertaining to field of designing such as creating the solar PV power plant design and the energy simulation report.</p> <p>Since all of the mentioned professional skills are related to a wide range of cognitive & practical skills to generate solutions to specific problems within solar designing, the role can be placed at level 7.</p> <p>The Job holder is expected to possess a wide range of cognitive and practical skills as s/he is responsible for ensuring the correctness of not only the solar PV power</p>	7

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Title/Name of qualification/component: Solar PV Designer		Level: 7	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
		<p>plant design but also site survey reports, energy simulation, etc. Further, the design approved by the solar PV designer would be used to carry out financial viability of the solar PV power plant, procurement of components and final installation. Therefore the job holder can't be placed at level 6.</p> <p>And as the job holder's cognitive & practical skills are not so wide enough to require the overseeing of many functions like installation and maintenance, s/he can't be placed at level 8.</p>	
Core skill	The individual is expected to be reasonably good in mathematical calculation, data collection and organisation of information. S/he is also expected to understand the social and political environment.	<p>The job holder is expected to be have good logical and mathematical skill so as to ensure the designs are created as per site survey reports, compute site parameters like irradiation data, etc. for deciding the overall plant output, deciding of the specifications and number of solar PV power plant components such as solar modules, inverters, etc. understanding of social, political environment prevalent at that time so as to interact with the customers as well as helpers who are primarily from the local environment. S/he is also expected to be reasonably good in data collecting, organizing information and logical communication such as solar resource assessment data, data from soil analysis, data from shading analysis, data from procurement team regarding the type and cost of commercially available etc. and organise the information to formulate the prepare the overall plant design including the structural and electrical design and prepare the energy simulation report. The individual should also keep oneself abreast about various types of simulation and design software, etc. The job holder is expected to have good communication and presentation skill as s/he has to prepare the energy</p>	7

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Title/Name of qualification/component: Solar PV Designer		Level: 7	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
		<p>simulation report and present to the project head for approval, communicate with teams like procurement team and installation team for ensuring proper project installation.</p> <p>Thus considering the core skills the job holder can be placed at level 7.</p> <p>Since the job holder core skills are not limited to only having reasonably good understanding of mathematical calculation and collecting and organising data but also has to good in presenting the data and communicating with people on a regular basis such as site surveyors, designers, procurement teams, project managers and project heads, s/he can't be placed at level 6.</p> <p>And as the core skills are not so broad enough have highly developed management skills to possess intellectual independence, have excellent communication skills and have full responsibility of management and supervision of the whole team, s/he can't be place at level 8.</p>	
Responsibility	<p>The individual is primarily responsible for the overall designing of the solar PV power plant including the structural and electrical design and the specifications of various components of a solar PV power plant and the preparation of the energy simulation report taking into account the design specifications. S/he is also responsible for ensuring that the site survey of the proposed site is carried out as properly. Further, s/he is responsible managing and leading the team of site surveyors, designers, draughtsman, etc.</p>	<p>The solar PV designer has full responsibility for the output and development of the design team as s/he ensures that the site survey is carried out properly, reviews the work of the designers and prepares the overall plant design with design specification and the energy simulation report. Hence s/he can be placed at level 7.</p> <p>Since the individual's responsibility is not limited to own work and learning and full responsibility for some people's work and learning but has responsibility for the output of the whole design group which is the overall plant design and</p>	7

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Title/Name of qualification/component: Solar PV Designer		Level: 7	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
		<p>the energy simulation report and their development, s/he can't be placed at level 6.</p> <p>And as job holder's responsibilities are not so wide enough to be fully responsible for the output and development of multiples groups such as designing, installation, etc. s/he can't be placed at Level 8. This responsibility is taken up by the Project Head who oversees the designing, business development as well as final installation of solar PV power plant. Hence s/he can't be placed at level 7</p>	

India-EU Skills Development project: Qualification File

SECTION 3 **EVIDENCE OF NEED**

What evidence is there that the qualification is needed?

During extensive industry interactions carried out while creating occupational maps and prioritization of job roles for Qualification Pack development, the mentioned qualification was indicated as a key requirement by the industry. In addition, the Skill Gap Report for the sector has indicated that a significant proportion of the workforce is involved in this work function. The study also indicates that this domain will be in great demand, due to focus of Government of India to support the sector through policy and implementation. Research was conducted in the Renewable energy sector manpower requirement estimates till 2025. The research provides the data that the discussed qualification is one of the critical roles in the sector. The details of statistics and research analysis are provided separately as a research analysis report

Evidence of the qualification is supported by validations with representation from across sub sectors. The complete list of validating companies has been enclosed as an annexure to the Q file.

What is the estimated uptake of this qualification and what is the basis of this estimate?

The increase in manpower requirements (as per projections) from 2017 to 2025 is approx. 13 times for this role. All the numbers are provided in research analysis study

What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF?

Currently, Skill Council for Green Jobs is the only Sector Skill Council set up which has the mandate of Certification and Assessment of candidates undergoing Skill Development courses in Solar Photovoltaic domain. NSDC list of Approved QPs was checked prior to commissioning the work. There is no overlap of these Qualification Packs with existing Qualification Packs.

The NCO/2015 Classification and MES Course List was also cross examined for existing trades, wherein no overlap / existing trade was found.

What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?

In the Qualification Pack, review date is scheduled for after 3 years in consultation with Subject Matter Experts. The monitoring of evaluation of assessments and Employer feedback will be sought post-placement, for review of the effectiveness of the Qualification.

Please attach any documents giving further information about any of the topics above.

Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

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SECTION 4 **EVIDENCE OF PROGRESSION**

What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?

1. Discussing the growth trajectory within each occupation after studying organisational charts of various industry players across small, medium and large scale organizations.
2. Exploring various lateral career opportunities for the discussed qualification
3. Ensuring that there is a clear role up in terms of performance criteria qualification experience and skill requirement from lower NSQF Level to higher levels in the hierarchy.

Please refer to attached career path as per annexure 1 which clearly defines the career path.

Please attach any documents giving further information about any of the topics above.

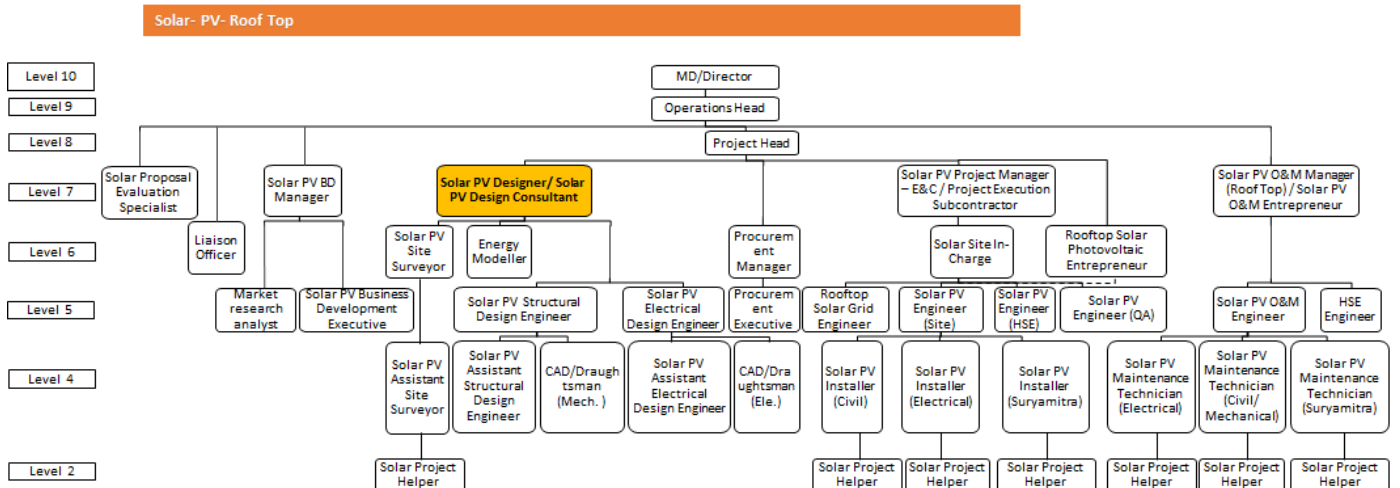
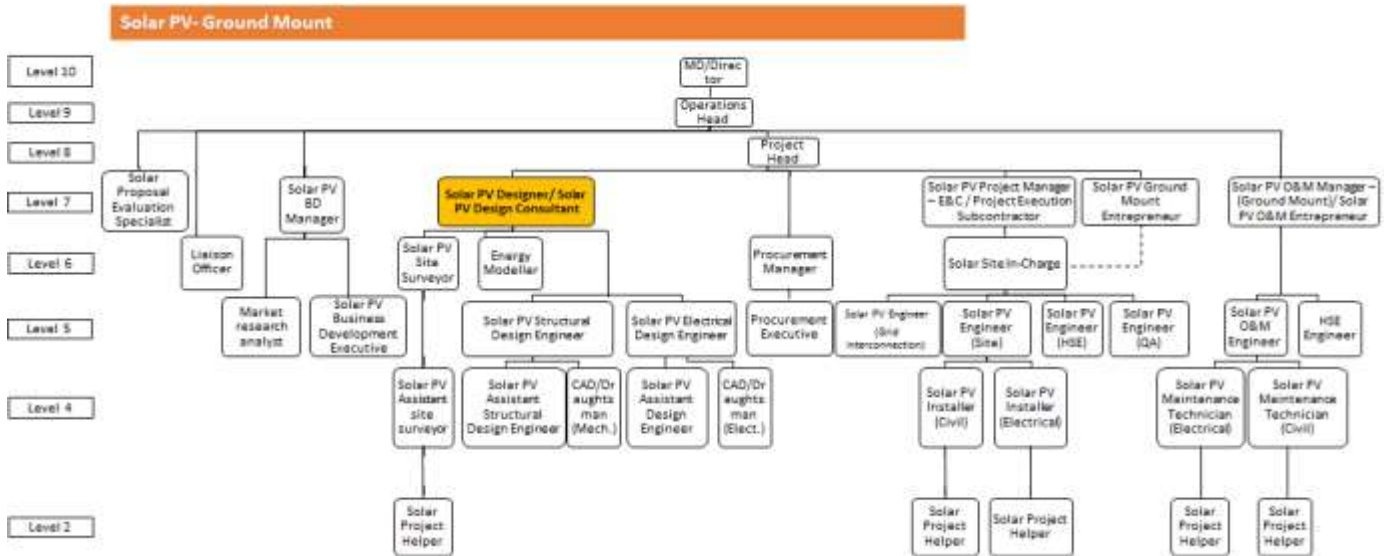
Give the titles and other relevant details of the document(s) here. Include page references showing where to find the relevant information.

1. Career Map of Solar PV Designer- Annexure 1
2. QP SGJ/ Q0110 - Annexure 2

NSQF QUALIFICATION FILE

Version 6: Draft of 01 September 2016

Annexure 1: Career Map



Annexure 2: QP SGJ/ Q0110