



# **Model Curriculum**

### **Site Surveyor-Wind Power Plant**

SECTOR:	GREEN JOBS
SUB-SECTOR:	RENEWABLE ENERGY
<b>OCCUPATION:</b>	<b>Engineering and Design</b>
REF ID:	SGJ/Q1202, V1.0
<b>NSQF LEVEL:</b>	6





Skill India		SCGJ SOLL COUNCIL FOR GREEN JOBS	N-S+D+C National Skill Development Corporation
	(	Certificate	
		JLUM COMPLIANCE ACK – NATIONAL OC STANDARDS	TO CUPATIONAL
	is	hereby issued by the	
	SKILLC	OUNCIL FOR GREEN JOBS	×
		for the	
	MO	DELCURRICULUM	
Qu	Complying to Nation alification Pack: ' <u>Site Surveyor-</u>	nal Occupational Standards of Jc Wind Power Plant ' QP No. ' <u>SGJ</u>	bb Role/ /Q1202 NSQF Level 6_'
		~ 1	- Lauren
Date of Issuance:	February 5th, 2018		Aller
Valid up to:	September 30 <sup>th</sup> , 2019		Authorised Signatory (Skill Council for Green Jobs)
* Valid up to the next	review date of the Qualification Pack		7-ini eponeiriai siren sana)





### **TABLE OF CONTENTS**

1. Curriculum	01
2. Trainer Prerequisites	06
3. Annexure: Assessment Criteria	07





# Solar PV Business Development Executive

**CURRICULUM / SYLLABUS** 

This program is aimed at training candidates for the job of a "<u>Site Surveyor-Wind Power Plant</u>", in the "<u>Green Jobs</u>" Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	Site Surveyor-Wind Power Plant		
Qualification Pack Name & Reference ID.	SGJ/Q1202, v1.0		
Version No.	1.0	Version Update Date	01 <sup>th</sup> Jan 2018
Pre-requisites to Training	B.E. / B. Tech. (Electrical/ Mechanical/ Civil/ Electronics and Communication / Electrical and Electronics/ Control & Instrumentation)		
Training Outcomes	After completing thi Conduct site Perform bas site (Ground Work effecti	Instrumentation) After completing this programme, participants will be able to: • Conduct site survey for wind power plant • Perform basic health and safety practices at project site (Ground and Height) • Work effectively with others	





This course encompasses <u>3</u> out of <u>3</u> National Occupational Standards (NOS) of "<u>Site Surveyor-Wind</u> <u>Power Plant</u>" Qualification Pack issued by "<u>Skill Council for Green Jobs</u>".

S. No	Module	Key Learning Outcomes	Equipment Required
1.	Introduction to Wind Power Sector Theory Duration (hh:mm) 18:00 Practical Duration (hh:mm) 6:00 Introduction Module	<ul> <li>identify different types of Wind technology and overview of Wind power sector in India</li> <li>understand the various market research reports and industrial magazines present in the market</li> <li>identify the different types of wind power plant, its components and working principles</li> <li>understand basics of electrical concepts like voltage, current, power, energy, etc.</li> <li>explain the benefits of wind energy over conventional sources of energy</li> <li>describe the typical specifications, functioning, operating principle, maintenance requirements, warranties, and safe operating &amp; handling procedures of different Wind power plant components like Blades, towers, motors, monitoring system and other components</li> </ul>	
2.	Conduct site survey for wind power plant Theory Duration (hh:mm) 6:00 Practical Duration (hh:mm) 36:00 Corresponding NOS Code SGJ/N1204	<ul> <li>analyse detailed site information</li> <li>analyse the daily, monthly and annual wind resource data of site to evaluate the potential for wind energy generation</li> <li>ensure the collection of data on local weather conditions such as temperature range, flooding (in case of onshore), wind speed, humidity, wind direction, pressure, rainfall and assess its impact on wind energy generation</li> <li>assess the ground water availability and quality, load bearing capacities, pH levels and seismic risk</li> <li>analyse the pre-site selection baseline data for project execution suitability</li> <li>identify location for Power Curve test</li> <li>ensure installation of meteorological mast (met mast) at site</li> <li>analyse wind data collected from met mast for wind potential</li> <li>prepare a detailed survey plan of the land proposed for installation of wind power plant with elevations and topography with the help of softwares like Windographer, WASP, Wind Sim, Google Earth, Global Mapper.</li> <li>calculate the exact land area of the proposed site where installation is to be commenced</li> </ul>	Wind resource atlas; Site visit for practical learning



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3.	Perform basic health and safety practices at the project site (Ground and Height)	<ul> <li>prepare contour map of proposed wind plant site</li> <li>conduct field surveys and give site ranking</li> <li>identify position of WTG, substation, transmission line, transformers, etc.</li> <li>identify accessibility of the site i.e., its connectivity to various transport mechanisms including rail, road, connecting roads etc.</li> <li>ensure conducting of route survey</li> <li>identify state/central law of land leasing and purchase</li> <li>assess grid availability for power evacuation including nearest substation and transmission line capacity</li> <li>identify the relevant grid authority</li> <li>check the feasibility of point of power evacuation</li> <li>validate collected wind data from site</li> <li>verify the wind potential with other resources such as NREL/ATLAS</li> <li>prepare detailed site survey report using GPS/DGPS and wind data analysis software</li> <li>select the relevant protective clothing/equipment for specific tasks and work</li> <li>state the name and location of relevant documents and people responsible for backt action and people responsible for backt action</li> </ul>	
		evacuation	
		<ul><li>evacuation</li><li>validate collected wind data from site</li></ul>	
		<ul> <li>verify the wind potential with other resources such as NREL/ATLAS</li> </ul>	
		<ul> <li>prepare detailed site survey report using OBC/DOBC and wind data and bits</li> </ul>	
		software	
3.	Perform basic health and safety practices at the project site (Ground and Height) Theory Duration (hh:mm) 6:00 Practical Duration (hh:mm) 30:00 Corresponding NOS Code SGJ/N1101	<ul> <li>select the relevant protective clothing/equipment for specific tasks and work</li> <li>state the name and location of relevant documents and people responsible for health and safety at the project site</li> <li>identify possible causes of risk at project site and their mitigation measures</li> <li>identify and follow warning signs on site</li> <li>establish safe working procedures at the project site</li> <li>ensure safe working practices when working at heights, confined areas and trenches</li> <li>identify methods of accident prevention in the work environment</li> </ul>	
		<ul> <li>follow safe operating procedures for lifting, carrying and transporting heavy objects &amp; tools</li> </ul>	
		<ul> <li>inspect the project site on a regular basis for any signs of spillage</li> <li>ensure safe storage of flammable materials and machine lubricating oil</li> </ul>	
		<ul> <li>apply good housekeeping practices at all times by removal/disposal of waste products</li> </ul>	
		<ul> <li>inform relevant authorities about any abnormal situation/behavior of any equipment/system promptly</li> </ul>	









	1			
		•	exhibit the use of various appropriate fire extinguishers on different types of fires correctly demonstrate rescue techniques applied during fire hazard administer appropriate first aid to victims were required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments participate in emergency procedures: raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work report the accident to the relevant authority in the prescribed format	
4	Work effectively with	•	accurately pass on information to the	
	others		authorized persons who require it and within agreed timescale and confirm its receipt	
	(hh:mm) 6:00	•	positive manner where required and	
	Practical Duration (hh:mm)	•	consult and assist others to maximize effectiveness and efficiency in carrying	
	12:00		out tasks	
	Corresponding NOS	•	display appropriate communication etiquette while working	
	SGJ/N0120	•	display active listening skills while interacting with others at work	
		•	demonstrate responsible and	
		•	escalate grievances and problems to	
			appropriate authority as per procedure	
		•	identify the need for common grounds	
			with clients, team members, etc. and negotiate in an effective manner to achieve the same	
		•	consider and respect the opinions, creativity, values, beliefs and	
			perspectives of others	
		•	ensure collaboration and group participation to achieve common goals	
		•	promote a friendly, co-operative environment that is conducive to	
			employee's sense of belonging	
		•	racilitate an understanding and appreciation of the differences among	
			team members	
		•	validate collected wind data from site	





		<ul> <li>verify the wind potential with other resources such as NREL/ATLAS</li> <li>prepare detailed site survey report using GPS/DGPS and wind data analysis software</li> </ul>			
();;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	Theory Duration (hh:mm) 36:00 Practical Duration (hh:mm) 84:00	Licensed solar PV simulation software; Site learning	e visit 1	for practic	al

Grand Total Course Duration: 120 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by Skill Council for Green Jobs)





## Trainer Prerequisites for Job role: "Site Surveyor-Wind Power Plant" mapped to Qualification Pack: "SGJ/Q1202, v1.0".

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "SGJ/Q1202, Version 1.0".
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	Minimum Educational Qualifications	B.E/B. Tech (Electrical/ Mechanical/ Civil/ Electronics and Communication / Electrical and Electronics/ Control & Instrumentation)
4a	Domain Certification	Certified for Job Role: "Site Surveyor-Wind Power Plant" mapped to QP: "SGJ/Q1202, Version 1.0". Minimum accepted score as per respective as per SCGJ guidelines is 80%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q0102" or equivalent. Minimum accepted score as per SSC guidelines is 80%.
5	Experience	B.E/B. Tech (Electrical/ Mechanical/ Civil/ Electronics and Communication / Electrical and Electronics/ Control & Instrumentation) with 2 years of relevant industry experience or M.E/M. Tech (Electrical, Electronics, Instrumentation, Renewable Energy) with 1 years of relevant industry experience





#### **CRITERIA FOR ASSESSMENT OF TRAINEES**

Job Role Site Surveyor - Wind Power Plant

### Qualification Pack SGJ/Q1202

### Sector Skill Council Skill Council for 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.

Con Total Marks: 300	м	arks Alloc	ation		
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out Of	Theory	Skills Practical
SGJ /N1204 Conduct site survey for wind power	PC1. analyse detailed site information		4	1	3
plant	PC2. analyse the daily, monthly and annual wind resource data of site to evaluate the potential for wind energy generation		5	2	3
	PC3. ensure collection of data on local weather conditions such as temperature range, flooding (in case of onshore), wind speed, humidity, rainfall and assess its impact on wind energy generation	100	4	1	3
	PC4. assess the ground water availability and quality, load bearing capacities, pH levels and seismic risk		5	2	3
	PC5. analyse the pre-site selection baseline data for project execution suitability		4	1	3
	PC6. identify location for Power Curve test		4	1	3







	PC7. ensure installation of				
	meteorological mast (met		4	1	3
	mast) at site				
	PC8. analyse wind data collected				
	from met mast for wind		5	2	3
	potential				
	PC9. prepare a detailed survey				
	plan of the land proposed				
	for installation of wind		4	1	3
	power plant with elevations				
	and topography				
	PC10. calculate the exact land area				
	of the proposed site where		4	1	з
	installation is to be		7	1	5
	commenced				
	PC11. prepare contour map of		1	1	2
	proposed wind plant site		4	T	5
	PC12. conduct field surveys and			1	2
	give site ranking		4	1	Э
	PC13. identify position of WTG,				
	substation, transmission		5	2	3
	line, transformers, etc.				
	PC14. identify accessibility of the				
	site i.e., its connectivity to				
	various transport		5	2	3
	mechanisms including rail,				
	road, connecting roads etc.				
	PC15. ensure conducting of route		4	1	2
	survey		4	1	5
	PC16. identify soil type and its		4	1	2
	strength		4	1	3
	PC17. identify state/central law of		4	1	з
	land leasing and purchase		4	1	3
	PC18. assess grid availability for				
	power evacuation including		5	1	4
	nearest substation and		J	1	4
	transmission line capacity				
	PC19. identify the relevant grid		4	1	ર
	authority		-r	<u> </u>	5
	PC20. check the feasibility of point		4	1	3
	of power evacuation		•	-	-
	PC21. validate collected wind data		5	2	3
	from site		-	_	-
	PC22 verify the wind potential		_	-	_
	with other resources such as		5	2	3
	NKEL/AILAS				
	PC23. prepare detailed site survey				-
	report using GPS/DGPS and		4	1	3
	wind data analysis software				
		TOTAL	100	30	70
SGJ/N1201 Perform basic	PC1. select the relevant	100	5	1	4
health and safety	protective	200	5	-	ſ







(Ground and Height)     Specific tasks and work       PC2. state the name and location of relevant documents and people responsible for health and safety at the project cito.     5	4
PC2. state the name and location of relevant documents and people 5 1 responsible for health and safety at the project cito	4
location of relevant documents and people 5 1 responsible for health and	4
documents and people 5 1 responsible for health and	4
responsible for health and	·
safety at the project site	
Salety at the project Sile	
PC3. identify possible causes of	
risk at project site and their 6	4
mitigation measures	
PC4. identify and follow warning	
signs on site	4
PC5. establish safe working	
procedures at the project 5 2	3
site	
PC6. ensure safe working	
practices when working at	4
heights, confined areas and 6 2	4
trenches	
PC7. identify methods of	
accident prevention in the 5 2	3
work environment	
PC8. follow safe operating	
procedures for lifting, 5 1	4
carrying and transporting	
DC0 inspect the project site on a	
PC9. Inspect the project site on a	л
of spillage	4
PC10 ensure safe storage of	
flammable materials and 5 1	4
machine lubricating oil	•
PC11. apply good housekeeping	
practices at all times by	
removal/disposal of waste	4
products	
PC12. inform relevant authorities	
about any abnormal	
situation/behavior of any 5 1	4
equipment/system	
promptly	
PC13. exhibit the use of various	
appropriate fire 6 2	4
extinguisners on aimerent	
PC14_demonstraterossue	
techniques annlied during 6 2	4
fire bazard	-
PC15. administer appropriate	
first aid to victims were	
required e.g. in case of	4
bleeding, burns, choking,	







		electric shock, poisoning etc.				
	PC16.	respond promptly and				
		appropriately to an				
		accident situation or		6	2	4
		medical emergency in real		Ũ	-	•
		or simulated environments				
	PC17	participate in emergency				
	FCI/.	procedures: raising alarm				
		procedures. Taising alarm,				
		sale/efficient, evacuation,		6	2	4
		correct means of escape,				
		correct assembly point, roll				
		call, correct return to work				
	PC18.	report the accident to the				
		relevant authority in the		6	2	4
		prescribed format				
			TOTAL	100	30	70
SGJ/N0120 Work	PC1.	accurately pass on				
effectively with others		information to the				
		authorized persons who		Λ	2	n
		require it and within		4	Z	Z
		agreed timescale and				
		confirm its receipt				
	PC2.	assist others in performing				
		tasks in a positive manner				-
		where required and		4	2	2
		possible				
	PC3.	consult and assist others				
		to maximize effectiveness				
		and efficiency in carrying		4	2	2
		out tasks				
	PC4	display appropriate				
	1 04.	communication etiquette		6	3	3
		while working		0	5	5
	DCF	display active listening				
	PC5.	display active listening	50	4	2	2
		skills while interacting		4	Z	2
	200	with others at work				
	PC6.	demonstrate responsible			-	-
		and disciplined behaviors		4	2	2
		at the project site				
	PC7.	escalate grievances and				
		problems to appropriate				
		authority as per procedure		3	1	2
		to resolve them and avoid				
		conflict				
	PC8.	identify the need for				
		common grounds with				
		clients, team members,		2	1	С
		etc. and negotiate in an		3	T	Z
		effective manner to				
		achieve the same				
	PC9.	consider and respect the		4	2	2
		opinions, creativity,		4	2	2
		•		-	-	







	values, beliefs and perspectives of others				
PC10	ensure collaboration and group participation to achieve common goals		6	3	3
PC11	<ul> <li>promote a friendly, co- operative environment that is conducive to employee's sense of belonging</li> </ul>		4	2	2
PC12	<ul> <li>facilitate an understanding and appreciation of the differences among team members</li> </ul>		4	2	2
		TOTAL	50	24	26