

CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

Name and address of submitting body:

Infrastructure Equipment Skill Council
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List of documents submitted in support of the Qualifications File

1. Qualification Pack
2. Occupational Map Tracker
3. List of QP/NOS validating companies
4. Recommendation from the concerned Line Ministry of the Government/Regulatory Body - Mailed
5. Model Curriculum

NSQF QUALIFICATION FILE

Approved in 19th NSQC dated - 26th May 2022

- SUMMARY

1	Qualification Title	Backhoe Loader Operator
2	Qualification Code, if any	IES/Q0101
3	NCO code and occupation	NCO-2015/ 8342.2101 Mobile Equipment Operator
4	Nature and purpose of the qualification (Please specify whether qualification is short term or long term)	<p>Nature of Qualification</p> <ul style="list-style-type: none"> - Qualification Pack <p>Purpose of Qualification</p> <ul style="list-style-type: none"> - To enable candidate to become a certified Backhoe Loader Operator
5	Body/bodies which will award the qualification	Infrastructure Equipment Skill Council
6	Body which will accredit providers to offer courses leading to the qualification	Infrastructure Equipment Skill Council
7	Whether accreditation/affiliation norms are already in place or not, if applicable (if yes, attach a copy)	N/A
8	Occupation(s) to which the qualification gives access	Equipment operations - Backhoe Loader Operator
9	Job description of the occupation	Backhoe Loader operator is responsible to move material to and from places in a safe and secured manner depending on the requirement
10	Licensing requirements	N/A
11	Statutory and Regulatory requirement of the relevant sector (documentary evidence to be provided)	N/A
12	Level of the qualification in the NSQF	4
13	Anticipated volume of training/learning required to complete the qualification	390 hours
14	Indicative list of training tools required to deliver this qualification	<ul style="list-style-type: none"> • Operational Backhoe Loader • Other items as listed in the model curriculum
15	Entry requirements and/or recommendations and minimum age	<ul style="list-style-type: none"> • 8th Class Pass+ ITI (2years) OR 10th Class Pass with 2 years of relevant experience • OR • 10th Class Pass + ITI (1year after Class 10th) with 1 year of relevant

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		<ul style="list-style-type: none"> experience • OR • 10th Class Pass + ITI (2years after Class 10th) • OR • 10th Class Pass and pursuing continuous regular schooling • OR • 3 Year Diploma (After 10th)12th Class Pass with 6 months of relevant experience • OR • Previous relevant Qualification of NSQF Level 3 with 2 years of relevant experience <p>Minimum entry age – 18 years</p>
16	Progression from the qualification (Please show Professional and academic progression)	Senior Backhoe Loader Operator
17	Arrangements for the Recognition of Prior learning (RPL)	Presently the industry has a large work force of operators and mechanics who are trained and experienced but not certified as per the NSQF norms. It is proposed to certify them under the RPL (Recognition of Prior Learning) program which will go a long way in facilitating their career progression
18	International comparability where known (research evidence to be provided)	<p>Australia: Level 1-6, Conduct Backhoe/Loader OperationsRIIMP0319D</p> <p>Canada: National Occupational Standards for Operating Engineers (Tractors/ Loader/ Backhoe Operators)</p> <p>This standard is about interpreting information, adopting safe, healthy and environmentally responsible work practices, selecting and using materials, components and equipment, setting up, operating and shutting down plant or machinery for lifting and transferring loads</p>
19	Date of planned review of the qualification.	31/05/2025
20	Formal structure of the qualification	
	Mandatory components	

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	Title of component and identification code/NOSs/Learning outcomes	Estimated size (learning hours)	Level
(i)	Bridge Module	4	4
(ii)	IES/N0101: Carry out pre-checks for backhoe operations	56	4
(iii)	IES/N0102: Operate a backhoe loader	90	4
(iv)	IES/N0103: Carry out maintenance and troubleshooting of the backhoe loader	60	4
(v)	IES/N7601: Comply with worksite health and safety guidelines	60	4
	Sub Total (A)	270	
On the Job Training (OJT)			
	Title of component and identification code/NOSs/ Learning outcomes	Estimated size (learning hours)	Level
(v)	On the Job Training	120	4
	Sub Total (B)	120	
Total (A+B)		390	

SECTION 1
ASSESSMENT

21	<p>Body/Bodies which will carry out assessment:</p> <ol style="list-style-type: none"> 1. Confederation of Indian Industries (CII) 2. IRIS Corporate Solutions Pvt Ltd 3. Demorgia Consulting Services Pvt Ltd
22	<p>How will RPL assessment be managed and who will carry it out?</p> <p>RPL program is designed to assess and certify those personnel with the requisite qualifications and experience. In the first step, individuals are screened and assessed, both through theory and practical tests, based on the same Assessment Criteria of the approved Qualification Pack. The skill gaps are thus identified and individuals undergo 'bridge training' as applicable. Then at the end of the short course they are finally assessed and certified.</p>
23	<p>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.</p> <p>The emphasis is on 'learning-by-doing' and practical demonstration of skills and knowledge based on the performance criteria.</p> <p>The assessment papers are developed by Subject Matter Experts (SME) available with the Assessment Agency 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 by IESC official for consistency.</p> <p>The assessments are designed so as to assess maximum parts during the practical hands on work. The technical limitations at the training centres are taken care in theory and viva to assess the conceptual understanding, Criteria such as use of lift to pick heavy objects or selection of fire extinguisher during a fire are also assessed under theory/viva.</p> <p>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 will empanel assessors with requisite industry/sectorial experience.</p> <p>The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to IESC Assessment Framework, competency based assessments, assessors guide etc.</p> <p>The assessors are provided with assessor's guide developed by the Subject Matter Expert of the assessment agency as per the assessment framework. The assessment guides are developed to ensure the maximum possible consistency in the assessment by different assessors and</p>

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.

The assessment by assessment agency will be completely based on the assessment criteria as mentioned in the Qualification Pack. Each NOS in the Qualification Pack (QP) will be assigned a relative weightage for assessment based on the criticality of the NOS- unique (functional)/ common NOS for job roles at the same levels. Therein each Performance Criteria in the NOS will be 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:

Each NOS in the QP will be assigned a relative weightage for assessment based on the functional importance of each. Further each Performance Criteria in the NOS will be assigned marks based on relative functional importance, which is in turn divided into theory and practical assessment. Overall practical constitutes 70% and written 30% of total marks.

Viva/Structured Interview: This tool will be used to assess select conceptual understandings related to practical handling of equipment and procedures with specific tasks at hand; and behavioural aspects of the job role. It will also include questions on tools & equipment, safety and environment

Written Test: This tool will be used to assess general conceptual knowledge / understanding and other aspects of the job role which are either not feasible or difficult to assess practically. The written assessment will comprise of

True / False Statements

Multiple Choice Questions

Matching Type Questions.

Optical Mark Recognition (OMR)/ Online System for this will be preferred.

ASSESSMENT EVIDENCE

24. Assessment evidence

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Backhoe Loader Operator

Qualification Pack Code IES/Q0101

Sector Skill Council IESC

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. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on these criteria
5. To pass the Qualification Pack, trainee should score a minimum 70% marks to successfully clear the assessment
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Total Marks: 200				Marks Allocation	
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Out of	Theory	Skill Practical
IES/N0101: Carry out pre-checks for backhoe operations	PC1. examine the body of the backhoe loader to check that it is free of cracks and wear	65	3	-	3
	PC2. check for dents and broken welds on the boom and the bucket		3	-	3
	PC3. check drive box and hydraulic oil levels		3	-	3

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	PC4. check for leaks in the hydraulic hose and ram		3	-	3
	PC5. carry out inspections to verify that the parking brake, main horn, reverse horn, and headlight are in proper working order		3	-	3
	PC6. check fan belt tension, electrolyte level and terminal tightness		3	-	3
	PC7. get visual inspection conducted to check the various controls, gauges, warning lamp and other safety devices		3	-	3
	PC8. check load chart is displayed in cabin		3	1	2
	PC9. check and adjust the driving position, rear and side mirrors, and seat belts to your comfort level		4	1	3
	PC10. ensure that the air filter dust bowls are clean, and that the gasket and inner filter are in good condition		3	-	3
	PC11. drain the water and debris from the fuel tank		3	-	3
	PC12. check to make sure coolant and oil in engine, transmission, etc. are topped up if necessary as per manufacturers indicators		4	1	3
	PC13. inspect the greasing points to ensure that all greasing pins and pivots points are appropriately greased		4	1	3
	PC14. inspect the compressor unit, as well as any fittings and air lines		3	-	3
	PC15. check clearance of the drawbar ball and socket, look for excessive free play, and adjust if necessary		3	-	3
	PC16. ensure the locking bar is in position to prevent the front		3	-	3

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	and rear chassis moving and creating a crushing zone (articulated machines only)			
	PC17. at regular intervals, clean the footplates, pedals, and stairs of mud, grime, ice, and snow		3	1 2
	PC18. certify that the backhoe loader has no one under or on the machine before operating		3	1 2
	PC19. keep a checking/maintenance diary in which all actions completed prior to starting the backhoe are recorded		4	2 2
	PC20. if a fault is found that is outside of the scope of the position, notify the operator immediately		4	2 2
IES/N0102: Operate a backhoe loader	PC1. plan and arrange the work in accordance with the instructions		3	1 2
	PC2. examine the jobsite for loose soil, concealed deep ditches, or marshy spots where the backhoe might become trapped		3	- 3
	PC3. prepare worksite ahead of operations in accordance of equipment operations		3	- 3
	PC4. carry out all pre-use and running checks	65	3	1 2
	PC5. ensure gear is on neutral position		2	- 2
	PC6. wear seatbelt and adjust your sitting position		3	- 3
	PC7. start the engine by using both the push button switch and the key switch		2	- 2
	PC8. in cold weather, utilize the priming pump and pre-heater to start the engine		3	1 2

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	PC9. select appropriate attachment as per the jobrequirement		3	1	2
	PC10. determine the machine's speed and directionin accordance with the stated purpose		2	-	2
	PC11. use the emergency stop button to disable allpower to the backhoe loader in case of a crisis, as per operator manual		3	1	2
	PC12. establish weight of load and ensure it iswithin safe operational limits of the machine		4	1	2
	PC13. continually monitor hazards and risks, andensure safety of self, other personnel, plant and equipment		3	1	2
	PC14. drive and run the machine, and change theoperating approach to meet changing work circumstances		2	1	1
	PC15. effectively use stabilizers to ensure the machinery is completely immobile while digging		2	-	2
	PC16. select, attach and apply slings and liftinggear in accordance with safe working load requirements		2	-	2
	PC17. position and locate machinery to ensure stability to effectively shift materials according tojob specifications		2	-	2
	PC18. move load using hand/audible/communication signals		2	-	2
	PC19. idle the equipment for a few minutes post theusage		2	-	2
	PC20. ensure attachments are cleaned, removedand stored as per organizations protocol		3	-	3
	PC21. when leaving the equipment unattended,make certain that it is turned off and		3	1	2

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	locked			
	PC22. adhere to the reporting procedures established by the employer		2	1
	PC23. complete all documentation in the prescribed standards in a timely manner		3	1
	PC24. in a timely way, report and escalate problems/incidents as needed		3	1
	PC25. if a fault is found that is outside the scope of his duty, notify the supervisor immediately		3	1
IES/N0103: Carry out maintenance and troubleshooting of the backhoe loader	PC1. assess the right service schedule by tracking machine operating hours		4	1
	PC2. regularly clean air filter bowls dust		2	-
	PC3. clean the footplates and steps to maintain them free of mud, dirt, and grease		3	1
	PC4. refill coolants, lubricants and fluids daily	55	3	1
	PC5. every day, oil all greasing pins and pivot points		2	-
	PC6. check battery levels and terminal condition, and make small changes as needed		3	-
	PC7. check and maintain the tyre rims, air pressure, wheel nuts, and treads according to the manufacturer's recommendations		3	-
	PC8. before performing any repair, be certain that the machine is on firm and level ground Keep note of		2	-

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	machine running hours to determine the best service plan				
	PC9. complete daily/weekly service sheets given by the firm in a punctual and legible manner		3	1	2
	PC10. ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only)		2	-	2
	PC11. ensure that suitable props/support devices are used and the bucket is not raised while performing maintenance		3	-	3
	PC12. when a situation is beyond his capabilities, he should analyze it and report it to appropriately skilled and competent individuals		4	1	3
	PC13. diagnose the problem		3	1	2
	PC14. handle and dispose waste based on environmental guidelines at the work place		3	-	3
	PC15. adhere to the reporting procedures established by the employer		4	1	3
	PC16. complete all documents in accordance with the required standards in a timely way		4	2	2
	PC17. report and escalate problems/ incidents as required in a timely manner		4	1	3
	PC18. if a fault is found that is outside the scope of his duty, notify the supervisor immediately		3	1	2
IES/N7601 : Comply with worksite health and safety guidelines	PC1. Comply with safety, health, security and environment related regulations/guidelines at the work site	15	1.5	0.5	1

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	PC2. use personal protective equipment (ppe) and other safety gear as applicable to the equipment and the worksite		1.5	0.5	1
	PC3. Follow safety measures during operations to ensure that the health and safety of self or others (including members of the public) is not at risk		1.5	0.5	1
	PC4. Carry out operations as per the manufacturer's and worksite related health and safety guidelines		1.5	0.5	1
	PC5. Handle the transport, storage and disposal of hazardous materials and waste in compliance with worksite health, safety and environmental guidelines		2	1	1
	PC6. operate various grades of fire extinguishers, as applicable		2.5	0.5	2
	PC7. support in administering basic first aid and report to concerned team members, as required, in case of an accident		1.5	0.5	1
	PC8. respond promptly and appropriately to an accident/ incident or emergency, within limits of your role and responsibility		1.5	0.5	1
	PC9. record and report details related to operations, incidents or accidents, as applicable		1.5	0.5	1

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SECTION 2

25. EVIDENCE OF LEVEL

Title/Name of qualification/component: Backhoe Loader Operator			Level: 4
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
Process	Backhoe Loader operator is expected to conduct pre-operation checks on Backhoe Loader, select the appropriate attachment for the job, run the equipment as per the job and do basic maintenance	The activities identified are the familiar and routine activities for him as these activities are independent of job and worksite he is deployed on. For e.g.: conducting pre-operational checks before starting the equipment, checks on hydraulic systems, etc. Considering the outcomes, the job role is pegged at level 04	4
Professional knowledge	Operator is expected to have knowledge of the functioning and operation of the Backhoe Loader equipment. Feature/specifications of the various attachment used and knowledge of loading components, pre-operation checklist and routine maintenance	Considering the in-depth professional and factual knowledge , which a Backhoe Loader Operator can carry out maintenance such as basics of hydraulic systems, engine and motors, method of lubricating, etc. this QP is pegged at Level 4.	4
Professional skill	Backhoe Loader Operator identifies the appropriate attachment for various jobs like excavation and loading, determining the operating range. He checks the equipment for operation readiness using pre-operation checklist and conducts the routine	He is practically engaged in the Backhoe Loader operation and maintenance. The major skills required of the operators are determining the operating range, manoeuvring, etc. Therefore, the QP is set at level 4	4

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Title/Name of qualification/component: Backhoe Loader Operator			Level: 4
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
	maintenance covering lubrication, oil levels, coolant, air filters, motors, tyre, body structure and keep the records as per the operations manual & standard operating procedures.		
Core skill	Operator is expected to be read and understand the various instrument panel, fluid levels and other indicators for pre-operation checks and routine maintenance. He has to monitor pressure gauge, engine and determine the operating range. All of this requires application of basic arithmetic principles .	Operator has to continuously give and receive instruction and guidance from co-workers on-site hence they are expected to be good in communication skills . Jobholder is expected to conduct themselves in ways, which show a basic understanding of the social and professional environment of working at construction, mining or other sites	4
Responsibility	The jobholder is responsible to: <ul style="list-style-type: none"> • Conduct pre-operation checks • Carry out Backhoe Loader operations • Conduct routine maintenance • Comply with worksite health and safety For each work site there can be variations in usage and operation of the Backhoe Loader equipment. So, the jobholder based on his own learning and experience has to identify appropriate attachment and operation process	Jobholder is majorly responsible for his own job and self-learning process which justifies the pegging of the QP at level 4 and not directly responsible for learning and work of others (which is a requirement for Level 5). In his routine activity he is free from supervision (which is a requirement of level 3).	4

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Title/Name of qualification/component: Backhoe Loader Operator		Level: 4	
NSQF Domain	Key requirements of the job role	How the job role relates to the NSQF level descriptors	NSQF Level
	to maximize the productivity efficiently. He is continuously engaged in the <i>self-learning process</i> and he has the <i>responsibility for own</i> work.		

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SECTION 3

EVIDENCE OF NEED

26	What evidence is there that the qualification is needed? What is the estimated uptake of this qualification and what is the basis of this estimate?		
	Basis	In case of SSC	Evidence
	Need of the qualification	The SSC would undertake market study and would enclose demand forecast for the proposed job role both on short-term and long-term basis to substantiate the requirement of the Qualification proposed. The SSC can produce the data from primary or authorized secondary sources as well.	The job roles have been formulated based on 'occupational mapping and functional analysis' involving manufacturers and customers/ end users of the infrastructure equipment sector products. Further these have been validated by all segments of the industry i.e. small, medium and large customers. The methodology/questionnaire and certificates in support for all have been enclosed.
	Industry Relevance	The SSC would undertake validation of the job roles with actual end-user industry where such employment is going to be generated and absorbed instead of generic validation of industry. The SSC would submit the endorsements from users/intended users of the qualification clearly supporting or otherwise the need for trained people against specific job role. (<i>The industry validation format to be used</i>)	The Occupational Analysis Report in support of these job roles has considered the industry growth and expected demand over the coming years. These statistics and other details have been covered in depth under the relevant sections of the same. Validations have been received from various stakeholders including end- user companies, associations and dealers of the equipment.
Usage of the qualification	The SSC would submit details of the employment	Covered in Occupational Mapping	

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		<p>generated (wherever applicable) and realised by virtue of training in the Qualifications of the sector earlier submitted for NSQF alignment.</p> <p>In case of unorganized sector, case studies or evidence may be given</p>	
	Estimated uptake	<p>The SSC would submit the estimated uptake of the qualification and What steps were carried out to test the likely uptake of the qualification? The basis of this estimate should include data about the number of jobs or places in courses of learning which will be available to people who are awarded the qualification.</p>	Covered in Occupational Mapping
27	<p>Recommendation from the concerned Line Ministry of the Government/Regulatory Body. To be supported by documentary evidences</p> <p>Mail sent to Ministry of Heavy Industries</p>		
28	<p>What steps were taken to ensure that the qualification(s) does (do) not duplicate already existing or planned qualifications in the NSQF? Give justification for presenting a duplicate qualification</p> <ul style="list-style-type: none"> • NSDC list of Approved and Under-Development QPs was checked prior to commissioning the work • Consultations with Skill Councils for Construction and Mining Sector 		
29	<p>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? Specify the review process here</p> <ul style="list-style-type: none"> • Employer feedback will be sought post-placement • A formal review is scheduled in three years time 		

SECTION 4

EVIDENCE OF PROGRESSION

<p>30</p>	<p>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? <i>Show the career map here to reflect the clear progression</i></p> <p>While designing the national occupational standards, occupational mapping was done on a large sample size and validated across the country. The career progression for roles in each occupation was also analysed and decided, based on industry validation across the country. The current challenges faced by the industry, at large, was also kept in mind.</p> <p>Backhoe Loader Operator (Level 4) > Supervisor (Level 5) <i>*Level= NSQF level</i></p>
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