Lifting Technician
Level 2 Apprenticeship
End-Point Assessment Plan

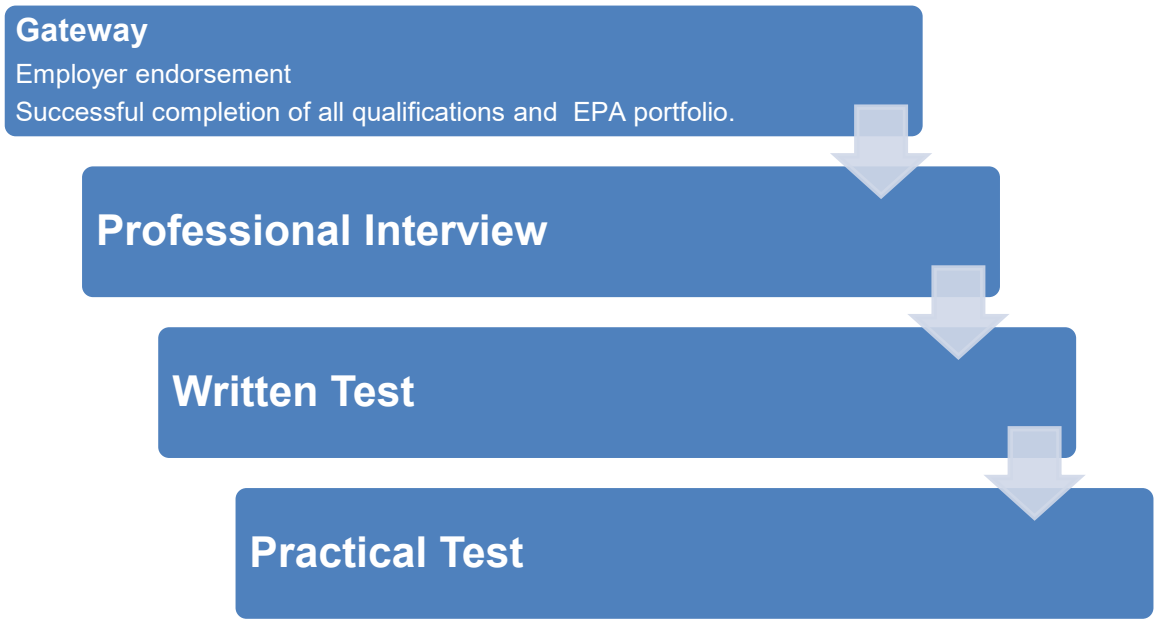
Contents

Lifting Technician Assessment Plan

Summary of Assessment

The end-point assessment (EPA) will confirm that the candidate has demonstrated the required skills, knowledge and behaviours and through experience, attained competence in one of the identified occupations: Tower Crane Operator, Crawler Crane Operator or Mobile Crane Operator.

The synoptic EPA will consist of three elements, a practical test[1], a written (knowledge) test[2] and professional interview[3]. Candidates are expected to gather work-based experience according to that specified within the '*Lifting Technician EPA Portfolio*'[4]; this will be separate to work-based experience gathered toward the NVQ. The written test will be based on testing awareness and understanding of theory in areas such as legislative requirements, slinging & signalling, lift planning, lifting accessories, environmental factors, ground support and communication. The practical test will provide the candidate with the opportunity to demonstrate their capability undertaking lifts using a crane and will include crane checks and operation as well slinging and signalling. Candidates must pass all elements of the EPA to be considered successful.



[1] https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

[2] https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

[3] https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

4 https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

Figure 1: Illustration of the EPA process

Assessment Overview

Assessment Method	Area Assessed	Assessed By	Grading
Professional interview	Knowledge, experience and behaviours: The professional interview will be based on the evidence provided within the individual's EPA portfolio. The EPA portfolio will hold a collection of evidence that the candidate has successfully demonstrated competence of the range of prerequisite practical skills which will be probed during the professional interview.	Independent Assessment Organisation	Pass /Fail
Written test	Knowledge and understanding of topics such as lift planning, ground support, communication, working as a team, legislative requirements, environmental factors and hazards.		
Practical test	Practical skills and behaviours: Observation and questioning in a test environment on three areas; pre-use checks, lifting and placing loads with a crane, and slinging/signalling. Carrying out visual and physical checks and adjustments on the crane in preparation for work, the candidate will provide narrative to explain 'why' particular checks are carried out and 'what' subsequent action(s) should be taken.		

Professional Qualifications

The mandatory qualifications listed have been identified by employers as the industry requirement to achieve the *Skilled* Card (Blue) in order to meet the industry initiatives for a competent workforce.

- NVQ Level 2 Diploma in Plant Operations - with optional units in Mobile Crane or Tower Crane or Crawler Crane depending on which occupational route taken.
- NVQ Level 2 Diploma in Controlling Lifting Operations – Slinger/Signaller.

On Programme Assessment

Formative assessment will take place as part of the programme; in addition, the candidate will record a range of lifts and activities carried out according to the criteria described by the *Lifting Technician EPA Portfolio* which will be used during the professional interview as part of the EPA. It is recommended that employers and providers refer to the programme guide[5] in order to ensure the full competence requirements are covered to prepare the candidate for the EPA and meet trailblazer apprenticeship requirements[6].

On programme, the candidate will likely undertake a relevant regulated knowledge and practical skills test that will assess basic knowledge and practical skills (within one of the three occupational routes; either mobile, tower or crawler crane) as a *trainee operator*. The employer should ascertain which occupational route is most suitable for the candidate to pursue prior to training, although a change of route to a different type of crane can be made in the early stages of the apprenticeship.

The apprentice must complete the required amount of off-the-job training in line with the apprenticeship funding rules.

The apprentice must complete training towards English and mathematics qualifications in line with the apprenticeship funding rules.

Assessment Gateway

The employer will assess the suitability of the candidate to progress to EPA. The trigger for the EPA will be following successful achievement of the mandatory qualifications and completion of the EPA portfolio. The employer will make the final judgement to endorse the candidate for EPA based on the above information.

The apprentice must have achieved English and mathematics qualifications in line with the apprenticeship funding rules.

[5] https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

[6] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487350/BIS-15-632-apprenticeships-guidance-for-trailblazers-december-2015.pdf

End Point – Assessment

What

The EPA consists of three elements that provide a reliable and consistent assessment approach to a predominately practical, occupation that requires a high level of understanding and hands-on experience for what is a safety-critical operation within the construction and allied sectors. The aim of the EPA is to ensure that the candidate is job-ready and competent in accordance with both legislation and industry requirements. **Annex B – Lifting Technician Standard Assessment Matrix** indicates how each EPA method maps to the knowledge, skills and behaviour competencies described in the Lifting Technician Apprenticeship Standard.

Professional interview

The professional interview is a recorded one-to-one interview between the candidate and assessor, with criteria based on the content of the EPA portfolio, an example can be found in **Annex D – Example of the Lifting Technician EPA Portfolio**.

The candidate must have completed the EPA portfolio (**Annex D**) which requires a specific number of repeated activities to be completed in a variety of situations and locations. The complete portfolio will show that the candidate has obtained the required breadth of experience and demonstrated competence in a variety of situations and under a range of conditions, to qualify for EPA. The EPA portfolio will allow for and accommodate skills competence across a range of environments which will reduce the cost of the practical element of the EPA. The purpose of the professional interview element of the EPA will be to verify the evidence collected within the EPA portfolio and validate the level of competence as sufficient to pass or insufficient and requiring further experience. The following topics that will be covered by the professional interview:

- Recognising hazards associated with the workplace, and report where needed if not controlled
- Complying with workplace health, safety and welfare legislation
- Working responsibly to contribute to workplace health, safety and welfare within the lifting operation
- Complying with organisational policies and procedures in contributing to health, safety and welfare
- Supporting organisational security arrangements and procedures
- Communicating with others in establishing and maintaining productive work practices
- Maintaining good working practices when conforming to productive working practices
- Interpreting given operating and work information and confirming relevance
- Organising with others the sequence and way in which work is carried out
- Requesting resources to sustain and complete the programme of work
- Preparing for operational performance to comply with contract information
- Minimising the risk of damage to the work and surrounding areas
- Complying with contract information to carry out the required work efficiently to the required specification
- Complete the work within the allocated time

An example of the criteria and assessment matrix that will be used for the professional interview can be found in **Annex C – Lifting Technician EPA: Sample Professional Interview criteria**. The recommended guidance document for Independent Assessment Organisations to conduct this test is freely available as

part of the occupational brief[7]. The assessor will first assess the EPA portfolio for 'completeness', sufficiency of experience and competence attained i.e. each logged activity has reached the appropriate level of competence and that the minimum frequency is recorded (**Annex D**). Finally, the candidate will be prompted for examples of their experience, responses will be assessed for depth and relevance; the assessor will classify responses as *not relevant; Insufficient or Satisfactory*.

Fail: Where any responses against the criteria is judged as not relevant or insufficient, the candidate will be required to attain further experience against those areas and be re-assessed against each area at a later date.

Pass: The definition of a satisfactory answer is where the candidate demonstrates and articulates their experiences and understanding against each of the criteria which conforms to occupational practices, legislation and good practice. The completion of the EPA portfolio and minimum number of activities forms part of the assessment criteria.

As a guideline, there should be a level of sufficient responses against all topics in all sections in order to pass. The minimum required for a sufficient response is described under the '*response area*' column of **Annex C – Lifting Technician EPA: Sample Professional Interview criteria**. It is understood that some examples may cover more than one section of the criteria, the assessor will determine whether the example given covers all requirements or if further examples are required.

Written test

The recommended guidance document for Independent Assessment Organisations to conduct this test is freely available[8]. The duration of the test will be up to two hours and will cover the topics listed (Table 1) in each discipline over 36 questions. The format of the questions will not be 'multiple choice' but will probe for full written answers that express a depth of knowledge in each topic. To pass the written test, the candidate will need to achieve a minimum of 70% correct answers, including 85% correct answers under safety critical topics.

It is recommended that the Independent Assessment Organisation will consult subject matter experts to devise the written test questions which must challenge the candidate to outline the full scope of their knowledge and experiences within each topic area.

Written test question authors should ensure:

- Each question requires a reasonable level of written information and not limited to one-line or yes/no answers. As a guide, typical answers should have a minimum of 40 words

[7] https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

[8] https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

- Some questions employ the use of diagrams and extracts from technical material, as are the creation of diagrams by the candidate in formulating answers
- A number of questions require the knowledge or use of formulae
- A number of questions require the extraction of technical information from supplied technical documents or literature, such a crane duty charts and the operator's manual.
- The test criteria and number of questions for each pathway can be found in **Annex F – Lifting Technician Apprenticeship EPA: Knowledge test criteria for all pathways.**

Practical test (Crane operation)

The practical test is a test of specific measurable skills using the requisite crane in a controlled environment. The knowledge, skills and behaviours will be assessed through observation and questioning over the course of the test. The test criteria[9] are specific to what is needed, how the test should be conducted and assessed.

The practical test requires the candidate to both set up and operate the relevant crane, that requires the lifting and placing of a given range of loads and carry out slinging and signalling duties where loads are lifted and moved. **Annex E – Lifting Technician EPA Practical test sample for Tower Crane**.

The test is divided into three parts – one specific to crane checks and inspections and one for travelling and operating and finally sling/signalling. Each practical activity must be conducted in its entirety with no disruption during the practical test. The test must be delivered independent of productive work in a specially set-up environment and must be delivered on a one-to-one basis and the relevant assessment sheet must be used during each element.

The activities include:

- Undertake all pre-user checks, configure and set the crane for lifting duties.
- Lift various loads using up to the full radius and slewing capabilities of the crane
- Accurately place load whilst minimising the swinging of loads and following signals and instructions.
- Maintain stability and safe working situations.
- Place cranes out of service, and isolate and secure.
- Prepare, sling and signal the movement of loads.
- Behaviours as identified in the standard.

The recommended test specifications, practical activities and grading criteria including all test documentation have been written by the employer development group specific to each apprenticeship option (mobile, crawler or tower crane) to

[9] https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

ensure that there is a minimum national standard which has been comprehensively measured. Approved centres are encouraged not to alter or deviate from the practical test specification provided within the occupational brief (freely available)[10].

The candidate needs to meet the standard against all listed criteria to be deemed successful on the test. If they do not meet all the criteria, this will be constituted as a 'fail'. The non-achieved element can be undertaken at a later date following corrective training and or additional experience.

How

The three elements of the EPA will be carried out in isolation but are expected to be tested over a concurrent period of two days; each element of the test can be undertaken on different days and at different locations, as required. The practical test will be timed, using the requisite crane conducting lifting activities using a specified range of loads and accessories and will, depending on the crane type, last from one and a half hours to 2 and a half hours with a further 2 hours allocated for the slinger signaller element. Completion of the practical test within the given time is considered part of the assessed criteria. However, the 'clock' may be stopped during the practical test between the observed activities, where required, to prepare any resources for the next observed activity.

The duration of the written test is expected to extend to two hours and the professional interview will be up to two and a half hours.

The EPA will be conducted according to the following sequence: a) professional interview; b) written test; and c) practical test. Due to the safety critical nature of the occupation and the respective activities, the practical test cannot be conducted until the candidate has demonstrated sufficient capability and experience of lifting operations. The professional interview is undertaken first in order to ensure that sufficient experience, measured by the EPA portfolio, has been achieved.

Who

The EPA may be delivered on training provider or employer premises; additionally a network of accredited specialised test centres across the UK may be approached by the Independent Assessment Organisation. The Independent Assessment Organisation will be responsible for setting the conditions and criteria for suitable testing environments. The *Consolidated Assessment Strategy for Construction and the Built Environment*[11] sets out the general industry approved conditions for

10 https://www.cpa.uk.net/skills-training/apprenticeships/apprenticeship-support-material

11 https://www.citb.co.uk/documents/awards/centres/con-sector_skills_council_consolidated_assessment_strategy.pdf

assessments and requirements for the selection of appropriate assessors. Specific guidance is accessible from the occupational brief for the Lifting Technician Apprenticeship.[12]

The quality, ability and experience of assessors are vital for fair, consistent and reliable assessment. Assessors for all elements of the EPA must have sufficient, verifiable, relevant current (up to date) industry experience, and knowledge and understanding of lifting operations involving the relevant crane type and slinging and signalling. This experience, knowledge and understanding must be of sufficient depth to be effective and reliable when judging candidate competence during all aspects of the EPA. Assessors must only assess in their acknowledged area of occupational competence and have a sound, in-depth knowledge of, and uphold the integrity of, the sector's apprenticeship standards. Assessors must have a sound knowledge of the assessment requirements for the end-point assessment, and have the relevant skills to enable the delivery (where applicable) for conducting a professional interview, practical skills testing, and setting and/or marking the written technical questions.

Summary of requirements for assessors of all elements of the EPA:

- Have sufficient, verifiable, relevant current (within at least 5 years) industry experience, knowledge and understanding of lifting operations, slinging and signalling.
- The above should be of sufficient depth (at or above the level being assessed) to be effective and reliable when judging candidate competence during all aspects of the EPA.
- Assessors should only assess in their acknowledged area of occupational competence.
- The assessor's experience, knowledge and understanding must be verified – a record kept that can be made available for audit at any time.
- Assessor experience and qualifications must be verified.
- EPA assessors will hold a relevant current assessor qualification.

End Point – final judgement

The Independent Assessment Organisation will make the final judgement on competence. This is based upon the following criteria:

- The individual has achieved a pass mark for the written test; this will be set at 85% aligned to standard industry knowledge competence testing.
- The individual has met all of the requirements of the test specification (**Annex E**) for the practical timed test.
- Performance throughout the test.
- Questioning at various stages within the test as part of the overall practical assessment.

12 http://www.cpa.uk.net/trailblazer-downloads/

- The individual achieves a pass mark for the professional interview including satisfactory professional reviews of the individual's EPA portfolio and experience of lifting operations within the workplace.

There will be one permissible re-sit of the written test; however, failure of either the practical test or professional interview elements would constitute grounds for re-sitting the entire EPA.

Successful completion of the EPA will voucher formal completion of the apprenticeship.

Independence

The approved Independent Assessment Organisation will be responsible for the final judgement and moderation of the EPA. To ensure independence:

- Meet the requirements detailed above.
- Approved and listed on the Register of End-point Assessment Organisations (R.o.E.P.A.O).
- Ensure the assessor is entirely independent of and not involved with the delivery of training and assessment during the on-programme element of the apprenticeship.
- Ensure the assessor is entirely independent of employer.

End-point –Summary of roles and responsibilities

Assessor	Role
Employer	Conducts a review of performance and assesses when the individual is ready to take the EPA. Verify evidence of the required activities according to the *Lifting Technician EPA Portfolio*.
Independent Assessment Organisation	Coordinates the entire EPA process, provides moderation of the knowledge test, practical test and responsible for the overall decision of the EPA assessors. Provide (where appropriate) feedback to unsuccessful candidates and be equipped to manage appeals/disputes.

Quality Assurance – Internal

To meet the expected internal quality assurances for EPA Independent End-point Assessment Organisations must have in place the following procedures and guidance:

- Demonstrable and on-going consultation process with current industry and occupational experts in 'live' project/site environments. Proposed strategy to maintain this engagement and cascade through standardisation meetings for the network of appointed assessors.
- Run standardisation events for assessors at least every six months to ensure consistent application of the guidance and consistency in marking the assessment methods, also to ensure assessors are trained in the relevant assessment and moderation processes and undertake regular continued professional development.
- Maintenance procedures for all EPA material(s) to reflect/ reference current, legislation, safety, techniques, codes of practice and specific industry/sector/project requirements.
- Demonstrable procedure and process to account for and track the progress of each learner through the EPA cycle, the 'learner assessment journey' must be the principle consideration of these procedures.
- Traceable network of communication and a viable proposal to manage the communication between the lead training provider (where applicable to the EPA); employer; candidate; (attempting the assessment) and Apprenticeship Certification Body. If absent, a suitable implementation strategy should be proposed along with benchmarked accepted standards and timeframes through a service level agreement system.
- Propose a suitable mechanism to manage the output, within realistic timeframes of all dependencies to the certification of each individual attempting the EPA i.e. relevant Awarding Organisations for each of the mandatory qualifications; lead training provider; EPA assessors; Apprenticeship Certification body etc. If absent, a suitable implementation strategy should be proposed along with a flag or service level agreement system of accepted standards and timeframes.
- Reference the respective *Lifting Technician Apprenticeship EPA guidance documents*[13] to appoint occupationally competent assessors.
- Policies and procedures to manage escalated appeals/disputes.
- Establish policies and procedures for the approval of assessment venues.
- Establish policies and procedures for standardisation of assessment and critical marking specification/criteria.
- Capacity to establish procedures to liaise with the proposed external quality assurance process.

Quality Assurance –External

The external quality assurance (EQA) of the Lifting Technician apprenticeship EPA will combine information gathering and audit processes under the direction and accountability of a representative non-profit subject matter expert employer panel. The Construction Industry Training Board (CITB) has proposed to provide a '*Quality Code'* statement within the Construction Industry for this purpose. The role CITB have proposed is to provide a service that will administer and coordinate the EQA

13 http://www.cpa.uk.net/trailblazer-downloads/

process and draw technical context and expertise support from current industry experts in the relevant discipline and relevant organisations such as the Construction Plant-hire Association (C.P.A.).

CITB will convene a representative (non-profit) panel to direct the technical requirements and take overall accountability for the decisions and advisory statements required for effective EQA of the Lifting Technician Apprenticeship EPA. The recommended composition of the panel will include representation from a wide selection of employers (i.e. size - minimum of 25% SME employers, sector interest); all employers will be afforded equal influence as part of this entity. It would be good practice to ensure employer membership of this panel is accessible across the industry and should be rotated at fixed intervals over an appropriate cycle (i.e. 2-3 years). The panel should meet bi-annually as a minimum initially; the frequency of events will be proportional to demand for Lifting Technician EPA.

The primary function of this panel will be to review the assessment specification(s) devised by all (R.o.E.P.A.O.) approved Lifting Technician apprenticeship EPA Independent End-point Assessment Organisations against the criteria of the apprenticeship assessment plan and consistent approach to:

- Technical complexity
- Benchmarked of standard of competence
- Quality of EPA against the benchmark (set by the panel)
- Range of methods and techniques

The scope of activity for the panel will cover:

- Reviewing all EPA delivery as consistent and up-to-date and contextualised against advancements in industry, legislative and technological practice;
- Recommendations for standard question banks and templates for each of the EPA methods;
- Consistent review of the competence standards and benchmark criteria;
- Audit and review the process of verifying EPA assessor qualifications;
- Review appeals and resolve disputes or challenges against assessment outcome decisions and issue recommendations for change where applicable;
- Set up performance indicators to measure the effectiveness of approved Lifting Technician End-point assessment organisations (EPAOs);
- Inspection of the operations and processes adopted by the approved lifting technician apprenticeship assessment organisations (AAOs);
- Standardisation and consistency panels invested in the decisions and outcomes of assessments across Independent Assessment Organisations;
- External ‘spot’ checks of results and comparative exercises to ensure results are consistent across sectors and geographic locations.

The output of the Quality Code process detailed below will be provided to the EQA employer panel for consideration and direction. This activity will be organised under four headings: *Informing*, *Assessing*, *Monitoring* and *Reporting*.

- *Informing* will involve:
  - Standardisation meetings with all Independent Assessment Organisations (AO)
  - Briefing on best practice to fulfil requirements of the approved assessment plan to AOs.
  - Consideration of the EPA pass/fail rate and any amendments to the EPA that have been identified.
  - Recommend approval processes for EPA assessors aligned to the Consolidated Assessment Strategy.
- *Assessing* will involve:
  - Recommend areas of CPD for EPA assessors across AOs.
  - Desk top evaluation of demand for EPA against AO provision.
  - Verifying adherence of EPA delivery to requirements of the assessment plan.
  - Review capability of AOs with regard to EPA materials, equipment and facilities.
- *Monitoring* will involve:
  - Provide a monitoring service for EPA delivery.
  - Evaluation of procedures and process to ensure standardisation across the AO network.
  - Checking the provision of candidate learning support resources and facilities for EPA.
  - Ensure fairness and transparency across EPA decision-making and methodology.
- *Reporting* will involve:
  - Provide reports on levels of compliance against the full requirements of the assessment plan.
  - Collate data and report findings of non-conformance and best practice.
  - Inform the industry and IfA of Non-compliance, volumes, success rates, availability of provision and put forward recommendations for cessation of approved status of underperforming AOs.
  - Report to stakeholders on completions, pass/fail rates, grading, provision and review requirements.

End-point Grading

The Lifting Technician occupation is high risk and safety critical – e.g. the errors of crane operation can have a detrimental effect on others. Therefore, a high and consistent level of competence must be set as a minimum in order to ensure lifting operations, on all construction projects, are not compromised. The EPA will not be graded above a pass mark which will reflect the high benchmarked standard of competence and approach to health and safety that is expected. There will be limited allowance within the EPA assessment criteria. The knowledge test will allow for no more than one more opportunity to re-take if failed at first attempt.

Implementation

Consistent End –Point Assessments

The Independent Assessment Organisation will show commitment to ensure consistency through effective policy and change management. There should be demonstrable, rational and realistic plans to cascade changes to legislation, relevant industry, and assessment criteria updates to assessors. This may take the form of mandated training or up skilling workshops. A procedure for organisational learning should be in place in response to upheld appeals/disputes or advisory statements issued by the external quality assurance body.

Suitable policies will be in place to endorse the continued professional development of assessors, EPA authors and policy makers within the Independent Assessment Organisation.

The stated specification for the EPA process provides a straightforward schedule of activity that can be replicated across the country either on training provider or employer premises. Recommendations are provided for minimum crane size, this will regulate the practical expectations, however, variable environmental conditions will need to be accounted for by the independent qualified assessor.

Affordability

The practical element of the EPA has been valued with a minimum and maximum group size of 3 and 4 individuals respectively, who will be assessed one at a time. Every effort must be made to maximise the attendee to assessor ratio whilst maintaining validity of the EPA. The written test element will be delivered through a virtual learning environment which will present the opportunity to optimise delivery and allow for automated moderation.

The estimated value of the EPA is on average, 10% of the total cost of the apprenticeship.

Volumes

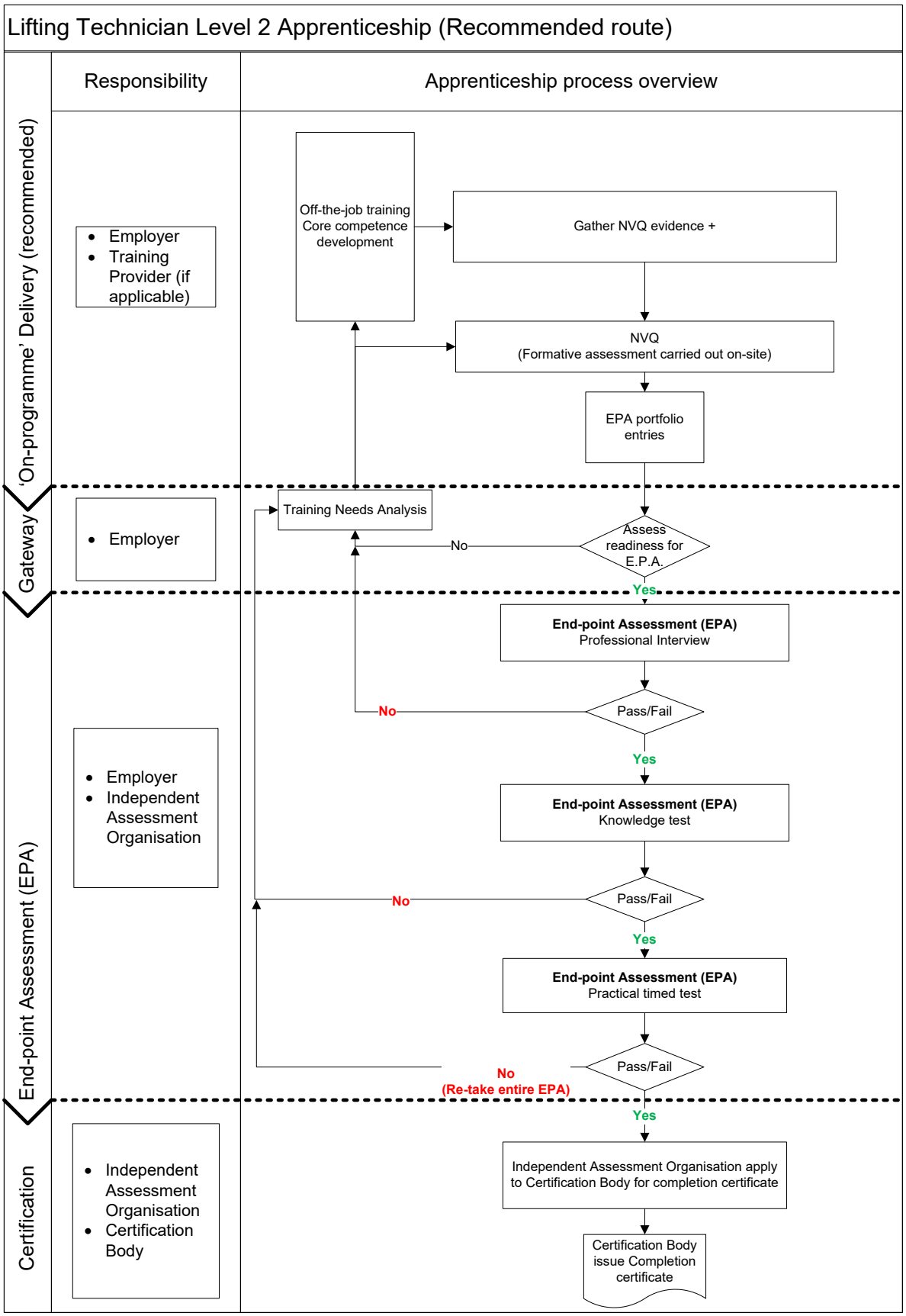
The Lifting Technician Apprenticeship will enable broader engagement across the industry and enhance attraction opportunities to the profession. The apprenticeship will provide an additional route to the experienced worker training that current exists.

Demand for this apprenticeship is expected to be in the region of up to 100 starts per annum. This figure will be subject to the demand of the industry with a number of major construction and infrastructure projects within the following sectors set to start over the next three years in the Residential; Commercial; Energy; Rail; Port authorities and Highways sectors.

> "The UK plant hire industry is the best established and most professional in the world, and is worth over £4 billion to the UK economy."[14]

[14] https://www.cpa.uk.net/about-cpa-how-to-join/who-we-are-what-we-do

Annex A – Illustration of Lifting Technician Apprenticeship



Annex B – Lifting Technician Apprenticeship Standard Assessment Matrix

Lifting Technician Standard	Assessment Method		
Knowledge	Written Test	Profess' Interview	Practical Test
The principles of health, safety and welfare and how they must be applied in relation to lifting operations and to others.	**X**	**X**	
The responsibilities under legislation and guidance (including the Health and Safety at Work Act, Lifting Operations Regulations 1998 and BS 7121) to undertake the work.	**X**	**X**	
How to communicate with others and follow organisational procedures to conform to productive work practices.	**X**	**X**	**X**
The functions and basic construction of the crane, the operating controls and electronic read-out system and terminology for the crane including booms, jibs, stability equipment, hoisting equipment and safety systems	**X**		**X**
How to conform with manufacturers requirements as per the operators handbook, codes of practice, lift plans/method statements, ground loading charts and inspection and reporting forms	**X**	**X**	**X**
The need and how to undertake pre-use checks, regular and non-scheduled maintenance procedures, the sequence of pre-use checks and of defect reporting, and of setting the crane for work	**X**	**X**	**X**
Different techniques, methods and safety issues of lifting, moving and placing a variety of loads	**X**	**X**	
How to interpret and apply information for the sequence of lifting operations	**X**	**X**	**X**
How to comply with lift plan specifications and official guidance for the lifting of loads	**X**	**X**	**X**
Safe working practices for setting up, configuring, lifting, moving and placing of loads whilst minimising the risk of damage to the work and surrounding area	**X**	**X**	**X**

The different techniques and methods on the moving, handling and storing of resources and equipment	X	X	
The requirements of working at height and the use of access equipment, and the procedures to be followed	X	X	X
The actions required for proximity hazards (nearby structures) and environmental hazards (strong winds)	X	X	
The principles and safety requirements for slinging and signalling duties	X		
The need for pre-use checks on lifting accessories, how to identify non-serviceable items and the procedures for placing out-of-service items	X		X
Skills			
Comply with relevant legislation and official guidance (including the Health and Safety at Work Act, Lifting Operations Regulations 1998 and BS 7121) when lifting and transferring loads		X	X
Conform with manufacturer's and the employer's operational and health and safety requirements		X	X
Identify the sequence of lifting operations to be carried out, communicate and organise the work with others	X	X	X
Undertake all pre-use checks, configure and set the crane for lifting duties		X	X
Programme/set-up and conform with the crane's electronic information systems		X	X
Lift various loads using up to the full radius and slewing capabilities of the crane		X	X
Accurately place load whilst minimising the swinging of loads and following signals and instructions		X	X
Maintain stability and safe working situations		X	X
Safely use, store and maintain and equipment.		X	X
Work at height following safety and working procedures		X	X

Place cranes out of service, and isolate and secure			X	X
Prepare and ready lifting accessories and the area of operation for the lifting of loads			X	X
Attach and secure various types of loads to a lifting hook ensuring balance, security and integrity			X	X
Direct and guide the movement of loads and accurately place loads using a variety of communication methods			X	X
Comply with specific legislation and guidance (inc. Lifting Operations Regulations 1998 and BS 7121) when slinging and signalling loads			X	X
Behaviours				
Effective communication	Oral, written, listening, body language, presentation.		X	X
Team work	Work effectively with others with limited supervision.		X	X
Independent working	Take responsibility for completion of your own work.		X	X
Logical thinking	Use clear and valid reasoning when making decisions to undertake the work instructions.		X	
Working effectively	Undertake the work in a reliable and productive manner.		X	X
Time management	Use own time effectively to complete the work instructions to schedule.		X	X
Adaptability	Be able to adjust to changes to the work instructions.		X	
Assertiveness and confidence	Able to resist pressures to work following unsafe practices		X	
Respect	Apply equality, diversity and inclusion in dealing with others.		X	

Annex C – Lifting Technician EPA: Sample Professional Interview criteria

Topic	Discussion criteria	Response area	Response level
Recognising hazards associated with the workplace, dealing with and report where needed if not controlled	For each site/location worked at, what were some of the main hazards at each site?	*Location, ground type, terrain, major or prolific proximity hazards*	
	If and when any hazards and or changed circumstances were reported	*Types of hazard reported, how and to whom*	
	How they were informed of each hazard and what control measures were used to minimise the risk.	*Method of communication, inductions etc. localised control measures.*	
	How they delayed or postponed work activities until rectification/control methods were identified	*To whom and by what method and pressures faced to start work without additional safety procedures in place*	
Communicating with others in establishing and maintaining productive work practices	How communication was undertaken, what methods and typical information relayed between all levels of site staff/co-workers	*Communication with site employers, supervisors, managers, other trades and supporting staff*	
	Levels and methods of communication for the maintaining of productive and safe working	*Relevant to role, level and extent of communication and type of information exchanged with co-workers. Use of communication equipment such as radios etc.*	
	Working with those from other cultures, background and genders	*Communication methods and practices used to ensure harmonious, safe and productive practices*	
Complying with workplace health, safety and welfare legislation	Methods of delivery relating to workplace inductions and typical content and durations	*When inductions took place, by whom and what was covered*	
	Compliance with regulations relevant to general workplace and those specific to lifting operations	*Identification of specific regulation and the need for compliance, and outcomes of non-compliance*	

	Complying with and contributing to site generic risk assessments and method statements	*Compliance and contribution methods and potential difficulties of maintaining compliance*	
	What safety control equipment/PPE/safety gear was required at each site/location?	*Generic (hard hat, hi-vis etc.) and specific (respiration equipment etc.)*	
Complying with contract information/lift plan to carry out the required work efficiently to the required specification	Setting-up arrangements of cranes for various lifting duties	*Setting up requirements for static and pick-and-carry duties inc. changes to falls of ropes/lifting hook and other adjustments required*	
	Positioning the crane or load for typical working areas or loads	*Positioning requirements and factors that needed to be taken into account.*	
	Factors taken into account when working with types of loads	*Range of typical loads lifted and placed inc. long, large area, fluid, specialist etc.*	
	Communication with the lifting team where issues or amendments to the operation occur	*Reasons for and type of communication with level of assertiveness required as principle member of lifting team*	
	Aspects of operating a range of cranes to safely and efficiently carry out the work	*How safe and efficient operation was maintained in a variety of situation and at different sites/locations, following of given instructions and signals*	
Complete the work within the allocated time	Methods that ensured that the work was completed in the projected time when deadlines were being approached	*Examples of what was undertaken to meet the deadlines*	
	Issues and causes where operations exceeded the given time	*Factors that prevented the work being completed on time and what was learnt*	
	Documentation completed at end of each lifting operation	*Types of document and method of completion inc. written, electronic etc.*	
Work Log Completion Confirmation			
Work log assessment	Sufficiency of information of each activity recorded	*Information within each work log against the criteria clearly establishes activity carried out according to given specification and standard.*	

	Minimum number of activities completed within all sections	*All activities recorded. Missing activities means this element of the EPA cannot be signed off as achieved.*	
Behaviours	All workplace behaviours listed in work log fully recorded and confirmed by employer.	*Confirmation by employer that all behaviours met.*	
	Minimum number of behaviours recorded	*Identified within each work log activity*	

Annex D – Example of the Lifting Technician EPA Portfolio – Mobile Crane

Lifting Technician

Mobile Crane

End-Point Assessment (EPA) Portfolio

Holder's Details

Name: .....

Employer/Sponsor: .....

Apprentice Ref No.: .....

Notes for Apprentices

- The aim of the EPA Portfolio is for the lifting technician to record work undertaken in the workplace.
- Complete entries provide a portfolio of evidence which forms part of the apprenticeship end-point assessment. Entries should be clear and legible.
- Entries should **NOT** include lifts undertaken during training activities at a training centre.
- Each entry must have a log number and should be sequential: for example, starting from number 1 and continuing from there.
- The matrix indicates the minimum number of activities or conditions that need to have been undertaken within the workplace whilst conducting lifting activities, both when operating the crane and when undertaking slinging/signalling duties.
- On completion of each lifting activity and when making an entry into the log, each activity or condition listed in the matrix should be marked by the corresponding log number.
- To complete the apprenticeship, the minimum number of activities of conditions must be met.
  The complete portfolio must be submitted prior to the professional interview element of the Lifting Technician End-Point Assessment.

Lifting Technician – Mobile Crane

EPA Portfolio

Work record matrix – Crane operating

Activity	Frequency (minimum)	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.
Weekly checks/inspections	20															
Intermediate lifts	20															
Complex lifts	5															
Differing crane make or model	4															
Large (surface area) loads	10															
Long loads	15															
Different lifting locations	10															
Working at 80% max. radius	10															
Working at minimum radius	10															
Working at 70% of max. capacity	16															
Extreme environmental conditions	5															
Different type of sites/sectors	6															
Working in the vicinity of other cranes	6															
Working in the vicinity of other plant	6															
Use of wire rope slings	4															
Changing falls of rope*+	8															

*provide assistance only required ~+can be provided via simulated evidence

Lifting Technician – Mobile Crane

EPA Portfolio

Work record matrix – Behaviours

Behaviour	Scope	Date demonstrated	Employer initials	Date demonstrated	Employer initials	Date demonstrated	Employer initials	Date demonstrated	Employer initials
Communication	Oral, written, listening, body language, presentation								
Teamwork	Working effectively with others and with limited supervision								
Independent working	Takes responsibility for completion of own work								
Logical thinking	Uses clear and valid reasoning when making decisions prior to and during work								
Working effectively	Work in a reliable and productive manner								
Time management	Uses own time effectively to complete work activities to schedule								
Adaptability	Adjusts effectively to changes in working practices								
Assertiveness and confidence	Resists pressure to follow unsafe practices								
Respect	Applies equality, diversity and inclusion in dealing with others								
Employers details	Name:	Company:					Date:		
I can confirm that the above information is authentic and accurate	***Signature:***								
Confirmation must be signed by senior management	***Position in Company:***								

Lifting Technician – Mobile Crane

EPA Portfolio

Work record log details – Crane operating

Log No.	Date of lift	Crane make/model
Configuration, radius, jib length		
Site location/project type		**Duration of lifting operation**
Description of lift inc. Load types/accessories etc.		
Proximity hazards/Weather conditions		
AP/CLOS Name		**AP/CLOS Signature**

Log No.	Date of lift	Crane make/model
Configuration, radius, jib length		
Site location/project type		**Duration of lifting operation**
Description of lift inc. Load types/accessories etc.		
Proximity hazards/Weather conditions		

AP/CLOS Name	AP/CLOS Signature

Lifting Technician – Mobile Crane

EPA Portfolio

Work record matrix – Slinging/Signalling

Activity	Frequency (minimum)	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.	Log no.
Wire ropes slings	4																				
Chain slings	20																				
Fibre slings*	10																				
Lifting beams	5																				
Specialist accessories	5																				
Crane (mobile) type	3																				
Loose/bundled loads	10																				
Long loads	10																				
Unbalanced	10																				
Large surface area loads	8																				
Containerised/drum type loads	8																				
Use of netting	5																				
Use of radios	25																				
Use of hand signals	25																				
Extreme environmental conditions	5																				

*includes flat slings, endless and round slings and use of sleeves

Lifting Technician – Mobile Crane

EPA Portfolio

Work record log details – Slinging/Signalling

Log No.	Date of lift	Crane make/model
Configuration, radius, jib length		
Site location/project type		**Duration of lifting operation**
Description of lift inc. Load types/accessories etc.		
Proximity hazards/Weather conditions		
AP/CLOS Name		**AP/CLOS Signature**

Log No.	Date of lift	Crane make/model
Configuration, radius, jib length		
Site location/project type		**Duration of lifting operation**
Description of lift inc. Load types/accessories etc.		
Proximity hazards/Weather conditions		

AP/CLOS Name	AP/CLOS Signature

Annex E – Lifting Technician EPA: Sample Practical test for Tower Crane

Lifting Technician – Tower Crane

EPA Practical Test

Resources required – Crane pre-use checks

Machine	• Suitable and functional tower cranes (luffing and trolley jib)
Area	• Surrounding area able to allow pre-use checks and weekly checks to take place
Equipment / resources	• Appropriate tools and equipment to undertake all checks • Appropriate access equipment for working at height requirements inc. Relevant safety equipment • Health and safety control equipment such as Personal Protective Equipment etc. • Operator's manuals and other manufacturers documentation to provide sufficient information for pre-use and weekly checks • Crane checks log document

Activity Instructions – Crane pre-use checks

Note: A separate test must be taken for each crane type – luffing and trolley jib and cannot be combined within a single test.

Sequence	To be undertaken as listed
Preparing for work	1. Using the operator's manual, convey (to the assessor) the pre-use or daily checks and weekly checks stipulated by the crane manufacturer 2. Undertake and complete all manufacturers' pre-use checks with a supporting commentary 3. Undertake and complete running checks and prepare the crane for working operations 4. Undertake and complete weekly checks and inspections 5. Complete the cranes/organisational checks/inspection log
Notes	The apprentice must provide a running commentary to pre-use checks being carried out in order to provide supporting

	information to visual checks (e.g. components) and physical checks (e.g. checking travel limits) being made. The assessor may prompt the apprentice to outline specific information but not ask direct questions that requires a technical answer. The operator's manual and any other supporting documentation must be referenced during activities 2 – 3. All pre-use checks must conform to LOLER 1998, BS 7121 and manufacturer's instructions.

Lifting Technician – Tower Crane

EPA Practical Test

Activity grading – Crane pre-use checks

Crane Type *(please tick)*	**Luffing jib**	**Trolley jib**

Mandatory	**Standard met during the test?**	**Y/N**
Preparing (activity)	1. All pre-start and running checks identified from operator's manual	
	2. Full pre-use checks carried out	
	3. Full running checks carried out including all crane operations	
	4. Full weekly checks carried out	
Preparing (narrative)	5. Sufficient narrative of visual, pre-operational and weekly checks	
	6. Technically accurate during narrative of visual checks	
Assessment	**Passed in this section: yes/no?**	

Note 1: Standards met means all activities have been correctly carried out in accordance and conforming with manufacturer's instructions, legislative requirements, good working and safety practices.

Note2: A separate marking sheet MUST be completed for each crane type – luffing and trolley jib.

Lifting Technician – Tower Crane

EPA Practical Test

Resources required – Crane operations (luffing and trolley jib)

Lifting equipment	• Suitable and functional tower crane (luffing and trolley jib)
Area	• Flat surface to allow lifting and placing of loads • Structure of at least 5 meters in height within the working radius of the crane • Facilities for out-of-sight lifts to take place
Other equipment / resources	• Measuring tape for measuring the maximum radius of the crane • Appropriate lifting accessories for all loads • Radio communication • Equipment/structures to facilitate out-of-sight lifts • Slinger and Signaller assistance
Loads	• LOAD 1 1 x load being at least 75% of the crane's rated capacity at full radius with 2 falls of rope • LOAD 2 1 x load being a tube or structure not less than 5 metres in length • LOAD 3 1 x load to facilitate activities 6 and 7 • LOAD 4 1 x load being a tube or structure not less than 6 meters in length able to be stood on one of its ends. (care must be taken to ensure that the lifting gear for load 4 is secure from horizontal to upright)
Notes	• The cranes selected for each test must be: - Of an assisted-erect design - Top-slewing - Cab controlled - With an under-hook height of at least 26 meters – trolley jib - With a slew ring height of at least 26 meters – luffing jib - Be in serviceable condition and conform with current legislation • The operator's manual must be with the crane • Duties charts for the crane being used for the test must be available for use

	• The crane and all lifting accessories must be fit-for-purpose and have a thorough examination certificate (or declaration of conformity) • The weight of all loads must be known • Full radius equates to the configuration of the crane being used for the test • The person selected for slinger and signaller duties must be certificated and competent • The assessor may NOT undertake the role of slinger/signaller

Lifting Technician – Tower Crane

EPA Practical Test

Activity Instructions – Crane operations (luffing and trolley jib)

Note: A separate test must be taken for each crane type – luffing and trolley jib - and cannot be combined within a single test.

Sequence	• Activities 2–8 can be undertaken in any order • Activity 10 must be undertaken at the end of the test • The test must be completed within a given time. The specifications' section gives further information
Preparing for work	1. Prepare and set the crane for each lift
Working tasks ***(refer to specifications)***	2. Lift LOAD 1 which must be at least 90% of maximum radius, rotate for at least 180 degrees without changing radius before landing at minimum radius. On completion lift and land at a designated place at mid-radius 3. Lift LOAD 1 which must be at mid-radius, rotate over the structure and land in a designated place using a minimum of 75% radius. On completion return the load to the original start point and land at designated place 4. Lift LOAD 2 which must be at ground level and at minimum radius and rotate for a minimum of 360 degrees maintaining minimum radius. Land at a designated place 5. Lift a load from a designated position, and land at a designated place out-of-sight of the candidate 6. Simulate pouring a wall by travelling a load in a straight line for a distance of not less than 6 metres 7. Recover simulated 2 metre load swings 8. Lift Load 4 to stand within several degrees of vertical on one of its ends. When vertical to the satisfaction of the tester, replace back to horizontal 9. All loads to be made safe following each activity
Shutting down	10. Place the crane in the out-of-service mode and carry out securing procedures
Notes	The assessor must check that the apprentice has programmed the RCI/LMI correctly before carrying out each activity On activities 2 and 4, the load must follow the ground contours and able to be handled by the slinger/signaller On activity 6, the line must be angled so that both slew and radius change functions are used simultaneously Activity 7 shall consist of a minimum of 2 x swings in a left to right plane and a minimum of 2 x swings in a forward to reverse plane

	Activity 5 must be undertaken twice – once using hand signals and once using radio communication. All other lifts may be undertaken using either radio or hand signals For the purpose of the test, all hand signals shall conform with BS 7121 Part 1:2006

Activity measurements – Crane operations (luffing and trolley jib)

Load placing	To be landed within 80mm of a designated place
Load swing	To be corrected within 3 moves
Test timings	The test must be completed within 1 hour and 30 minutes

Lifting Technician – Tower Crane

EPA Practical Test

Activity Assessment – Crane operations (luffing and trolley jib)

Crane Type ***(please tick)***	**Luffing jib**	**Trolley jib**

Mandatory	**Standard met during the test?**	**Y/N**
Setting up	1. Climbing and descending of the crane	
	2. All crane operations and limit switches checked	
	3. Area checked and safe prior to setting up for lifting and depositing loads	
	4. Jib/trolley positioning prior to lifting loads	
	5. RCI programmed for all lifting duties	
	6. Communication arrangements confirmed with the signaller	
	7. SWL not exceeded at all times	
	8. Load integrity & stability maintained at all times	
Working	9. Each load lifted clear of surface and checked for integrity	
	10. Loads did not contact any obstructions/structures	
	11. Full observation undertaken prior to moving loads fore and aft	
	12. Full observation undertaken before slewing	
	13. Lifted, moved and lowered all loads in a controlled manner	
	14. Lifting accessories kept clear of the ground	

	15. All crane movements intentional	
	16. Placed all loads at the given points within the given tolerance	
	17. Load swings kept within 0.5 of a metre / rectified swinging	
	18. No shock loading of the crane	
	19. Combined control use demonstrated/straight line kept during concrete pour	
	20. Instructions conformed with	
	21. Sequence of using controls	
	22. Smooth use of controls	
	23. Lifted all loads vertically (maximum sway – 250 mm)	
	24. Landed all loads vertically (maximum sway – 250 mm)	
	25. All loads left in a safe situation	
Shutdown	26. All shut down and securing procedures	
	27. Crane placed into free slew mode	
Other	28. Legislation, manufacturers' and health and safety requirements complied with	
	29. Test completed within the given time	
Assessment	**Passed in this section: yes/no?**	

Note 1: Standards met means all activities have been correctly carried out in accordance and conforming with manufacturer's instructions, legislative requirements, good working and safety practices.

Note2: A separate marking sheet MUST be completed for each crane type – luffing and trolley jib.

Lifting Technician – Tower Crane

EPA Practical Test

Activity Assessment – Slinging/signalling

Sequence	• Activities 2 and 3 can be undertaken at any time during the test • Activities 9 - 13 can be undertaken in any order • The test must be completed within a given time. The specifications section gives further information
Preparing for work	1. Check all lifting equipment for function and serviceability 2. From two or more examples each of a web sling and chain sling and wire rope. identify the correct type of accessory and impound all unserviceable items 3. From at least two examples of lifting equipment certification, identify certification not meeting current legislation or regulations
Setting up for work	4. Establish the weight and features of each load prior to lifting 5. Establish communication methods (visual and with radios) with the lifting equipment operator 6. Select the relevant lifting accessory for the load to be lifted 7. Ensure and maintain an exclusion zone around the lifting operation
Working tasks ***(refer to specifications)***	8. Attach the selected lifting accessory and prepare each load for each lifting activity 9. Lift LOAD 2 from ground level, guide to maximum radius of the lifting equipment, slew for at least 180 degrees and land at a designated place which is at mid-radius. When landed, detach the accessory 10. Lift LOAD 2 from ground level. The load is to be landed on the vehicle bed. When landed, detach the accessory. 11. Lift LOAD 3 from ground level, guide to minimum radius of the lifting equipment, slew for at least 360 degrees and land at a designated place which involves a change of radius. When landed, detach the accessory 12. Lift LOAD 4 from ground level to within several degrees of vertical on one of the ends. When vertical to the satisfaction of the Assessor, replace back to horizontal **Out-of-sight lifts** 13. Lift LOAD 1 from ground level, and land in a designated place out of sight of the lifting equipment operator. When landed, detach the load – the hook must be moved away from the area before reattaching the load 14. Attach LOAD 1 from the out of sight area and return the load to the original start point, land at a designated place and detach the accessory
Completing work	15. All loads to be made safe following each activity 16. Collect and store all lifting accessories
Notes	• Each load must be lifted using a different type of lifting accessory. • At least one lift shall be undertaken using radio communication and at least one lift using hand signals • For the purposes of the test, all hand communication shall conform with BS 7121: Part 1 2000 • For activity 11, the minimum radius need not be less than 4 metres • The out-of-sight lift (activities 13 and 14) must be such that the lifting equipment operator is unable to see the top of the load or lower half of the accessories • For activities 13 and 14, the lift shall be conducted using radios to place the load and hand signals to retrieve the load, or vice versa.

	• The assessor may during the test ask the apprentice to identify the type of type of lifting accessory being used • The assessor cannot be involved in providing or relaying signals during the test except in emergency situations

Activity Assessment – Slinging/signalling

Load placing	To be landed within 80mm of a designated place
Test timings	The test must be completed within 1 hour and 30 minutes

Activity Assessment – Slinging/signalling

Mandatory	**Standard met during the test?**	**Y/N**
Preparing	1. Checked all accessories for function and serviceability	
	2. Checked certification is in-date and applied to relevant accessory	
	3. Unserviceable accessories identified	
	4. Unserviceable accessories impounded/clearly marked	
	5. Certification not in-date identified	
Setting up	6. Landing positions checked and safe prior to lifting and landing hooks	
	7. Correct lifting accessory identified on request	
	8. Intended load travel route (inc. Pick & carry duties) clear of hazards	
	9. Communication procedures established with others involved with the lift	
	10. Weight and C of G of each load established	
	11. Relevant lifting accessories selected for each load	
Working tasks	12. Lifting accessories attached to each load	
	13. 13 SWL or WLL of lifting accessories not exceeded at all times	
	14. 14 Load integrity and stability maintained at all times	
	15. 15 Full observation undertaken before moving all loads	
	16. 16 Full observation maintained whilst guiding and landing all loads	
	17. 17 Loads did not contact any obstructions, structures or crane	

	18. 18 Communication clear, precise and understood by all involved	
	19. 19 Lifting equipment hoist line vertical as each lift commenced	
	20. 20 Loads not damaged during lifting, moving and placing	
	21. 21 Load kept under control during lifting, movement and travel	
	22. 22 Loads secure and stable after removing accessories	
	23. 23 Personnel kept clear of underside of loads	
	24. 24 Exclusion zone maintained	
	25. 25 All load placing at the given points within the given tolerance	
	26. Lifting Accessories kept clear of the ground	
	27. Each load checking for integrity prior to moving *(by weight of load taken but not raised above ground level)*	
	28. Loads level during lifting and moving	
	29. Hand lines correctly fitted and used	
Completing work	30. Lifting accessories removed and stored	
Other	31. Legislation, manufacturers' and health and safety requirements complied with	
	32. Test completed within the given time	
Assessment	**Passed in this section: yes/no?**	

Note: Standards met means all activities have been correctly carried out in accordance and conforming with manufacturer's instructions, legislative requirements, good working and safety practices.

Annex F – Lifting Technician Apprenticeship EPA: Knowledge test criteria for all pathways.

Crane pathways		Tower Crane	Mobile Crane	Crawler Crane
Question criteria (topics)	Req.*	Recommended number of questions		
Factors involved in ensuring clear access to the lifting area		1	1	1
Full contents of a lift plan	✓	2	2	2
Roles and responsibilities of the lifting team		3	3	3
Actions to be taken if the lift plan cannot be complied with		1	1	1
Factors relating actions to be taken at the end of a shift		1	1	1
The need for and when checks, inspections and thorough examinations should take place	✓	2	2	2
Working near to utility services and overhead power lines	✓	2	2	2
How environmental factors can affect lifting operations and measures to be taken	✓	2	2	2
Methods of extracting and interpreting information from crane duties charts	✓	2	2	2
Typical hazards for lifting operations using the respective crane		3	3	3
Causes of known accidents and prevention	✓	3	3	3
Safe use of lifting accessories	✓	2	2	2
Hazards of handling loads – static and pick-and-carry duties	✓	2	2	2
Common sling angles and SWL (Safe working Load) or WLL(Working Load Limit) if retained	✓	2	2	2
Attaching of accessories to particular load types		2	2	2
Advantages and disadvantages of types of lifting accessories		2	2	2
Limits of competence and actions to be taken when work is outside limits		1	1	1
Ground support requirements and ground pressures exerted by a crane	✓		2	2
Trolley and luffing jib crane typical applications	✓	1		
Effective communication methods and issues	✓	2	2	2
Types, duties and functions of mobile cranes	□		1	
Total		36	38	37

*Questions that require a comprehensive answer