Arrangements for:

National Certificate in Land-based Engineering: An Introduction

at SCQF level 4

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Acknowledgement

SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of National Qualification Group Awards.

History of changes

It is anticipated that changes will take place during the life of the qualification, and this section will record these changes. This document is the latest version and incorporates the changes summarised below.

Version number	Description	Date
03	H225 74 Numeracy has been added as an alternative to F3GF 10 Numeracy.	15/02/2016
02	H23W 74 Literacy *has been added as an alternative to* F3GB 10 Communication.	12/06/2014

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1 Introduction

This is the Arrangements Document for the **National Certificate (NC) in Land-based Engineering: An Introduction at SCQF level 4**. This document includes background information on the development of the Group Award, its aims, guidance on access, details of the Group Award structure, and guidance on delivery.

This introductory level award is designed to meet the needs of candidates who wish to progress to further study and to provide appropriate skills and knowledge for those who wish to enter employment in land-based engineering, or associated industries. Candidates will undertake a range of key introductory subjects covering land-based engineering and development of Core Skills.

2 Rationale for the development of the Group Award

The rationale for the development of the NC was based on three main aspects which reflected a gap in current SQA provision. The first was the absence of a suitable SQA award at SCQF level 4 and the second was the limited availability of relevant, current Units suitable for the needs of those studying land-based engineering at that level. Thirdly, a new NC would assist the development of a candidate's core and soft skills, which are essential for progression to employment or further study in land-based engineering and associated industries, which may include use of:

- agricultural machinery (ie tractors, harvesters, cultivation and crop protection machinery)
- ground care machinery (ie garden, sports turf and local grounds maintenance machinery)
- forestry machinery (ie chainsaws, chippers and harvesters)
- fixed machinery (ie grain/crop processing and milking equipment)
- construction machinery (ie lift trucks and mini diggers)

The industry also includes manufacturers, dealerships, machinery hire companies, and independent technicians.

A consultation exercise was undertaken among key stakeholders to establish the need for and design of the NC.

3 Aims of the Group Award

This qualification supports the values, purpose and principles of Curriculum for Excellence (CfE). It is aimed at attracting school leavers who may not have achieved recognised qualifications from school and wish to consider further education as a route toward full-time employment or progression to higher level or work based qualifications in service engineering. The Group Award can also be used as a general introduction to engineering principles for those who wish to develop a range of engineering skills at a fundamental level to increase employability prospects. The aims summarised in the following sections reflect the purpose of the qualification.

3.1 Principal aims of the Group Award

Principal aims are to:

- Prepare candidates for Modern Apprenticeships (MA) or Further Education.
- Enable candidates to access land–based engineering training without having formal entry qualifications.
- Integrate with Curriculum for Excellence.
- Allow candidates to acquire a broad based understanding of relevant health and safety considerations.
- Develop foundation vocational skills for the land-based engineering repair sector.
- Provide a basic knowledge of land-based engineering principles and systems and a general introduction to tractor and machinery operation and maintenance.
- Provide basic knowledge of work processes within the land-based engineering sector.
- Assist candidates in applying their knowledge of a range of land-based engineering skills.
- Provide candidates with an understanding of current practices within the land based engineering sector.

3.2 General aims of the Group Award

General aims are to:

- Provide the opportunity to develop and practice Core and soft skills.
- Raise awareness of opportunities for employment in the land-based sector.
- Develop a transferable skill set which candidates may take to other industry sectors.
- To provide academic stimulus and challenge, and to foster an enjoyment of land-based engineering.
- Develop flexibility and co-operative work practices with colleagues.
- Develop candidates' employability skills.

3.3 Target groups

Evidence from centres indicates that there are three main client groups for current provision at this level. The National Certificate in Land-based Engineering: An Introduction at SCQF level 4 is aimed at meeting the demand from these client groups**.** These are young people who have left school in the relatively recent past and who lack basic Core Skills, having limited formal school attainment. The course is suitable for any learners who are attracted to the practical nature of the course including mature adult returners who have decided to re-enter education**.**

3.4 Employment opportunities

The Group Award is designed to enable candidates to develop skills, knowledge and understanding, and to develop both industrial and contextualised Core Skills relevant to contemporary business. The award is a stepping stone to both employment and further study. The inclusion of a Unit in Accident Prevention and Emergency Procedures in the mandatory section is intended to help candidates to develop an essential life skill which may also enhance their employment prospects.

4 Access to the Group Award

Access to this award will be at the discretion of the centre, and there are no specific, formal entry requirements. The qualification is open to everyone but is principally aimed at recent school leavers and adult returners who may have limited academic qualifications. Applicants should have a genuine interest in developing a career in land-based engineering or related industries.

There is no recommendation that candidates should possess any specific Core Skills on entry, as opportunities to develop Core Skills will be provided throughout the course.

5 Group Award structure

5.1 Framework

Unit title	Code	SQA credit value	SCQF level	SCQF credit points
Mandatory section: 9 credits required				
Communication Or Literacy	F3GB 10 H23W 74	1 1	4 4	6 6
Employability Skills for Land-based Industries	DX0W 10	0.5	4	3
Numeracy Or Numeracy	F3GF 10 H225 74	1 1	4 4	6 6
Accident Prevention & Emergency Procedures	F5FK 10	1	4	6
Land-based Engineering: An Introduction: Internal Combustion Engines	H1MT 10	0.5	4	3
Land-based Engineering: An Introduction: Wheels and Tyres	H1MW 10	0.5	4	3
Land-based Engineering: An Introduction: Sheet Metal Workshop Skills	H1MV 10	0.5	4	3
Land-based Engineering: An Introduction: An Introduction to Land-based Machinery	H1MR 10	1	4	6
Engineering Assembly Skills	F5W6 11	1	5	6
Information and Communication Technology	F3GC 10	1	4	6
Land-based Engineering: An Introduction: Electrics and Hydraulics	H1MN 11	1	5	6
Optional section: **3 credits required**				
Land-based Engineering: An Introduction: Thermal Joining and Cutting Processes	H1MP 11	1	5	6
Work experience	D36H 10	1	4	6
Local Investigations	D36J 10	1	4	6
Lifting and Handling Skills	E7RJ 11	0.5	5	3
ATV operations	FN5A 11	0.5	5	3
Tractor Operations 1	D900 10	1	4	6
Tractor operations 2	D901 11	1	5	6
Land-based Engineering: An Introduction: Sustainability	H1MS 11	1	5	6
Customer Care	DV2Y 08	1	3	6

The structure of the NC meets the identified aims and the requirements of the sector through the following:

- It provides foundation skills, knowledge and capabilities needed for employment
- It retains the benefits of existing provision at this level but provides the credibility of a nationally accredited award
- It consists of Units which are practical and will engage the interests of learners
- It is compatible with and provides a progression route to the existing National Certificates at SCQF level 6 and SVQ/NVQs
- It provides flexibility for learners and centres

- It provides an opportunity for learners to develop Core and soft skills

The content of the mandatory Units has been chosen to reflect the needs of learners and employers. Candidates will undertake a range of key introductory subjects covering tractors, machinery, engines, electrics, hydraulics, workshop skills, welding, tractor operation, all-terrain vehicles (ATV), health & safety, emergency procedures, and sustainability of work practices.

5.2 Conditions of award

Candidates will be awarded the National Certificate in Land-based Engineering: An Introduction at SCQF level 4 on completion of all of the 9 credits listed in the mandatory section and three credits from the optional section. The NC equates to 12 SQA credits of learning (72 SCQF points).

5.3 Core Skills

As well as developing knowledge and skills of the land-based engineering sector, it is intended the award will also develop Core Skills in *Communication, Numeracy, Information and Communication Technology (ICT)*, and *Working with Others*. Successful candidates will gain Core Skills, knowledge and understanding that will provide them with the opportunity to progress to higher level qualifications or work based qualifications and will significantly improve employment prospects.

Candidates who achieve the National Certificate in Land-based Engineering: An Introduction at SCQF level 4 will have opportunities to develop Core Skills to the following levels as a minimum:

Core Skill	SCQF level	Signposted/Certificated
Communication	4	Certificated
Numeracy	4	Certificated
Information and Communication Technology	4	Certificated
Problem Solving	4	Signposted/Certificated *
Working with Others	4	Signposted/Certificated *

*Depending on optional Units chosen.

Candidates gaining the NC will have achieved certificated Core Skills in *Communication, Numeracy* and *Information and Communication Technology (ICT)* as a minimum. *Problem Solving* and *Working with Others* may also be developed, but are only certificated in the following optional Units:

- D36H 09 *Work Experience* provides automatic certification of Problem Solving and Working with Others at SCQF level 3
- D36J 10 *Local Investigations* provides automatic certification Problem Solving and Working with Others embedded at SCQF level 4
- FN5A 11 *ATV Operations* provides automatic certification of the component Critical Thinking *(Problem Solving)* at SCQF level 5

The Core Skills map is shown in Appendix 1.

5.4 Articulation and credit transfer

5.4.1 Articulation

Although there is no direct articulation from the National Certificate in Land-based engineering an Introduction at SCQF level 4 to the National Certificate in Land-based Engineering at SCQF level 6 or the SVQ/NVQ, candidates who have successfully completed the award are well prepared for progression to these higher level qualifications.

5.4.2 Credit transfer

Candidates who have suitable prior qualifications or experience may be eligible for credit transfer for Units in the National Certificate in Land-based Engineering: An Introduction at SCQF level 4. Centres should follow appropriate procedures in cases where this arises.

6 Approaches to delivery and assessment

6.1 Delivery

Although delivery of the award is at the discretion of individual centres the National Certificate in Land-based Engineering: An Introduction at SCQF level 4 has been designed to be compatible with arrangements in centres where a full-time programme of 17–20 Units is provided to learners at SCQF levels 4–5 who want to gain experience across the sector.

The award is designed with the emphasis placed upon developing candidates' own personal qualities and skills for future study and prospective employment in the land-based engineering or related sector. The focus will be essentially on practical activities, delivered through task related workshop activity, field-trips, and practical work. As this course is at SCQF level 4, learner support may be offered to assist individuals achieve their full potential not only during workshop practical but also during guidance and tutorial sessions. Units are assessed individually with candidates expected to complete both practical and theoretical work to meet specified deadlines and standards.

The mandatory topics of study include Communication, Numeracy, Information and Communication Technology, Employability Skills for Land-based Industries, Accident Prevention & Emergency Procedures, Service Engineering: Internal Combustion Engines, Engineering Sheet Metal Workshop Skills, Engineering Assembly Skills, Service Engineering Systems (Introduction to Electrics and Hydraulics) and Land-based Machinery.

Candidates must undertake at least three credits from the following optional Units: *Thermal Joining Skills, Wheels and Tyres, Work Experience, Local Investigations, Lifting and Handling Skills, ATV operations, Service Engineering and Sustainability, Tractor Operations 1, Tractor Operations 2* and *Customer care*.

The course content reflects the needs of learners, allowing them to gain a wide range of basic skills required to improve employment prospects for the Land-based engineering sector.

This programme of study gives candidates the opportunity to begin developing these essential skills and to gain the underpinning knowledge necessary for employment or to allow for progression to further study at higher levels or work based training. The qualification is aligned to areas of the National Occupational Standards (NOS) for land-based engineering at level 2 and may be considered as a "stepping stone" to develop knowledge and understanding of many of the underlying principals and processes embedded in the NOS/SVQ/MA.

6.2 Integration across Units

Outcomes from individual Units should be integrated where possible to use time effectively and avoid duplication, especially of assessment. For example, in Tractor Operations 1, Tractor Operations 2 and Power Units; aspects of engine maintenance should concentrate on in identifying systematic maintenance procedures. Appendix 2 shows opportunities for integration and assessment across Units.

6.3 Assessment

6.3.1 Formative Assessment

Formative assessment should be used throughout the delivery of the NC to gain feedback, reinforce learning, build confidence, and prepare candidates for summative assessment.

6.3.2 Summative Assessment

Assessment of knowledge may be determined by a range of different approaches, eg a series of short assessment papers consisting of multiple choice, and/or short answer questions, partly completed diagrams may also be considered. Learners on this programme would benefit from a range of different approaches being used and if possible, a holistic approach to Unit assessment should be adopted where the minimum numbers of assessment instruments consistent with maintaining agreed national standards are used.

Practical assessment should be carried out in the workshop through individuals undertaking specific practical tasks, questioning and answering techniques should be used to assess learner engagement knowledge and understanding with a group checklist used to record Outcomes.

7 General information for centres

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**.

Internal and external verification

All instruments of assessment used within this Group Award should be internally verified, using the appropriate policy within the centre and the guidelines set by SQA.

External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications.

Further information on internal and external verification can be found in *SQA's Guide to Assessment* **(www.sqa.org.uk)**.

8 General information for candidates

The National Certificate (NC) in Land-based Engineering: An Introduction at SCQF level 4 designed to provide the skills and knowledge you will need if you are seeking employment in Agriculture, Construction Plant, Forestry and Ground Care Engineering, or in other areas of the land-based sector.

In the land-based sector you may work on a wide range of specialist vehicles and machines which are used in farming, forestry, horticultural businesses, ground care and sports facilities, including golf courses and parks.

Work in this sector normally has a 39 hour working week as standard, but this can vary depending on seasonal demands and deadlines. The working environment can vary between working indoors in a workshop to outdoors on field work, visiting farms, and other customers sites.

The work with agricultural, forestry and horticultural equipment can be hazardous and engineers are required to wear protective clothing and at times, high-visibility vests and hard hats.

As a land-based engineer you will need:

- good practical skills and IT skills
- to be creative and inventive
- to have good problem-solving skills
- the ability to record and analyse data
- an understanding of customer care
- an understanding of health and safety legislation
- an interest in the agricultural, horticultural, forestry, or construction sectors
- training to keep equipment in good working order through planned maintenance, as well as carrying out any diagnostic and repair work when required

The NC allows you to develop the wide range of introductory skills and knowledge required to repair and maintain land-based machines. It focuses on engineering activities in the workshop where you will learn about: hydraulics, engines and electrical systems, welding, and various aspects of workshop practice, above all it will provide you with a broad base of land-based engineering knowledge which you will call on regularly throughout your career.

As a land-based service engineer this work will involve you in:

- working on machinery and equipment
- carrying out repairs
- servicing and maintaining a wide range of land-based vehicles and machinery
- adjusting and setting equipment to allow correct operation and optimum performance
- replacing parts with new components if necessary
- using techniques such as welding to make repairs
- using a wide range of hand and specialist tools

Employers generally require individuals who possess a wide range of skills and personal attributes such as communication and interpersonal skills, initiative, problem-solving, and team working abilities. These are known as transferable skills because they are useful life skills which you may use in different areas of your personal and working life.

There are no specific entry requirements for the NC. You can discuss your situation with college staff who will be pleased to offer you advice on how the course can be of help to you.

Teaching

While studying for the NC, the teaching and learning approaches could include the following: classroom teaching, group work, practical engineering work, including dismantling and re-assembly and repair, computer simulation, investigations/research (including the use of the internet), and project work. Industrial visits and work experience will also be included to allow you to see 'real life' land-based engineering situations.

Assessment

Assessments will meet national standards and every attempt has been made to ensure sufficient time is available to learn both the practical and theory aspects to become proficient. Individual Unit assessments can include practical exercises, short written tests, multiple choice questions, assignments, computer simulations, and project work. Your lecturer should tell you at the start of the Unit what form the assessment will take.

Progression pathways

The NC may assist you in progressing to:

- National Certificate in Land-Based Engineering at SCQF level 6.
- SVQ/NVQ level 2 Modern Apprenticeship (MA) in Land-based Operations.
- Other land-based employment opportunities.

Employers in the land-based engineering sector have come to regard introductory awards as a pre-entry requirement for new entrants to the industry. The NC can also provide a possible introductory pathway to a progression route into higher education to further learner studies at diploma or degree level.

9 Glossary of terms

SCQF: This stands for the Scottish Credit and Qualification Framework, which is a new way of speaking about qualifications and how they inter-relate. We use SCQF terminology throughout this guide to refer to credits and levels. For further information on the SCQF visit the SCQF website at **www.scqf.org.uk**

SCQF credit points: One SCQF credit point equates to 10 hours of learning. NQ Units at SCQF levels 2–6 are worth 6 SCQF credit points, NQ Units at level 7 are worth 8 SCQF points.

SCQF levels: The SCQF covers 12 levels of learning. National Qualification Group Awards are available at SCQF levels 2–6 and will normally be made up of National Units which are available from SCQF levels 2–7.

Dedicated Unit to cover Core Skills: This is a non-subject Unit that is written to cover one or more particular Core Skills.

Embedded Core Skills: This is where the development of a Core Skill is incorporated into the Unit and where the Unit assessment also covers the requirements of Core Skill assessment at a particular level.

Signposted Core Skills: This refers to the opportunities to develop a particular Core Skill at a specified level that lie outwith automatic certification.

Qualification Design Team: The QDT works in conjunction with a Qualification Manager/Development Manager to steer the development of the National Certificate/National Progression Award from its inception/revision through to validation. The group is made up of key stakeholders representing the interests of centres, employers, universities, and other relevant organisations.

Consortium-devised National Certificates/National Progression Awards are those developments or revisions undertaken by a group of centres in partnership with SQA.

10 Appendices

Appendix 1: Core Skills map
Appendix 2: Integration of delivery and assessment
Appendix 3: UK Land-based Technician Accreditation Scheme (LTA)

Appendix 1: Core Skills map

NC in Land-based Engineering: An Introduction at SCQF level 4

Unit code	Unit	Communication	ICT	Numeracy	Problem Solving			Working with Others
					Critical Thinking	Planning and Organising	Reviewing and Evaluating	
F3GB 10	Communication	C (4)						
DX0W 10	Employability skills for Land-based industries	S (4)	S (4)		S (4)	S (4)	S (4)	S (4)
F3GF 10	Numeracy			C (4)				
D900 10	Tractor Operations 1	S (4)	S (4)					S (4)
H1MT 10	Land–based Engineering: An Introduction: Internal Combustion Engines	S (4)			S (4)	S (4)	S (4)	S (4)
H1MW 10	Land–based Engineering: An Introduction: Wheels and Tyres	S (4)		S (4)	S (4)	S (4)	S (4)	S (4)
H1MV 10	Land–based Engineering: An Introduction: Sheet Metal Workshop Skills			S (4)		S (4)		
H1MR 10	Land–based Engineering: An Introduction: An Introduction to Land-based Machinery	S (4)			S (4)	S (4)	S (4)	S (4)
F5W6 11	Engineering Assembly Skills			S (4)				S (4)
F3GC 10	Information and Communication Technology		C (4)					
H1MN 11	Land–based Engineering: An Introduction: Electrics and Hydraulics	S (4)		S (4)	S (4)	S (4)	S (4)	S (4)
F5FK 10	Accident Prevention & Emergency Procedures	S (4)			S (4)	S (4)	S (4)	

Unit code	Unit	Communication	ICT	Numeracy	Problem Solving			Working with Others
					Critical Thinking	Planning and Organising	Reviewing and Evaluating	
H1MP 11	Land–based Engineering: An Introduction: Thermal Joining and Cutting Processes			S (4)	S (4)	S (4)	S (4)	S (4)
D36H 09	Work Experience				C (3)	C (3)	C (3)	C (3)
D36J 10	Local Investigations	S (4)			C (4)	C (4)	C (4)	
E7RJ 11	Lifting And Handling Skills				S (4)	S (4)	S (4)	S (4)
FN5A 11	ATV Operations	S (5)		S (5)	S C	S (5)	S (5)	
D901 11	Tractor Operations 2	S (4)	S (4)			S (4)		S (4)
H1MS 11	Land–based Engineering: An Introduction: Sustainability	S (4)	S (4)	S (3)	S (4)	S (4)	S (4)	S (4)
DV2Y 08	Customer Care	S (4)			S (4)	S (4)	S (4)	S (4)

Appendix 2: Integration of Delivery and Assessment

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 1 Communication	Use of straightforward reading, writing, speaking, and listening skills in situations in your personal life, at work, and in education.	**Unit 2, 10, 13, 14**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	Excellent opportunities for contextualisation and integration with most Units.
Unit No 2 Employability skills for Land-based industries	Develop the employability skills that are valued by the land-based sector including good timekeeping, attendance, safe working, and team working in practical context. Review and evaluate self-progress in developing these skills. Risk assessment in a specific task to develop an understanding of the need to consider safety in all land-based industries.	**Unit 1, 10, 18, 20**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	Employability exercise could be incorporated into practical workshop sessions, If the learner is on work experience a feedback sheet can be provided for a dealer to complete. Outcomes can be used to complete learner personal learning plans.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 3 Numeracy	Identify numerical data and relationships to solve problems/ decide what operations to carry out and in what order to solve a problem/ use numerical and statistical concepts/Carry out simple calculations or at least one calculation/interpret data for a single graphical form/select appropriate graphical form and use it to communicate information.	**Unit 7, 10**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	Excellent opportunities for contextualisation and integration with most Units.
Unit No 4 Tractor Operations 1	Describe position and functions of driver controls and external systems of the tractor. Drive and manoeuvre a two wheel tractor and two wheel trailer attached. Attach and detach equipment with PTO and mounted on the 3 point linkage of a tractor. Cary out a 50 hour service in accord to manufacturer's instructions. Identify tractor types & their common uses.	**Unit 5, 17**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	It is strongly suggested that his Unit be delivered to allow candidates opportunities to experience areas of real field work.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 5 Land–based Engineering: An Introduction: Internal Combustion Engines	State common fuels used by internal combustion engines and recognise the operating cycles of internal combustion engines. Identify the main internal combustion engine components and match them to their function. Carry out routine service adjustment to a single cylinder engine.	**Unit 4, 17**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This is likely to be a workshop exercise where learners carry out a service on a single cylinder engine which may be fitted to a lawnmower or generator. The engine can be utilised to explain the operating cycle and may be dismantled to identify component parts. If preferred the cycle and component ID could be carried out in a classroom environment.
Unit No 6 Land–based Engineering: An Introduction: Wheels and Tyres	Identify tyre types used in land-based operations. Identify wheel types used in Land-based operations. Demonstrate the safe use of jacking equipment on Land-based vehicles and equipment. Remove, repair, and refit wheels and tyres from Land-based equipment.	**Unit 4, 15, 17**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This Unit deals with an area related to land-based engineering but will offer some candidates the opportunity to develop a skill-set which is applicable to a recognised alternative employment opportunity in tyre retail.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 7 Land–based Engineering: An Introduction: Sheet Metal Workshop Skills	Describe the use of hand tools used in land-based workshops operations. Describe the application of non-thermal joining techniques used in land-based workshops operations. Mark out materials to given specifications. Manufacture an artefact to given specifications.	**Unit 3, 12**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This is a practical workshop exercise where learners have the opportunity to develop a range of engineering skills by manufacturing a useable artefact.
Unit No 8 Land–based Engineering: An Introduction: Land-based Machinery	Identify machinery used in land-based engineering and match them to their functions. Remove and replace components from land-based machinery. Adjust and operate land-based machinery.	**Unit 4, 17**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This Unit enables the learner to learn about land-based machinery and its use. The machinery can be prepared for fieldwork with appropriate repairs carried out before the machine is used for field working applications, it is envisaged that this Unit can be delivered in a practical context.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 9 Engineering Assembly Skills	Know and understand the skills of basic assembly techniques used in engineering. Identify, select and use different types of mechanical fasteners, and identify a range of seals and bearings. Develop knowledge and understanding to interpret engineering drawings, assembly diagrams, and instructions. Select and use tools correctly and safely in producing engineering assemblies and report simple faults. Apply current health and safety requirements and safe working practices while undertaking engineering assembly operations.	**Unit 7**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This Unit is practical and is applicable to the majority of other practical Units and should be delivered holistically. Teaching staff may consider using demonstrations of different assembly systems presenting learners with opportunity to practice and to be assessed.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 10 Information and Communication Technology	Use ICT effectively to access, process, and present information in familiar, everyday settings. Select and start up application software suitable for word-processing, spreadsheets, databases and use ICT to name and organise folders and sub-folders. Enter and edit data using appropriate applications, software. Locate information, text, numbers and graphics from a range of local or remote data sources. Use appropriate search techniques, select relevant information that matches criteria. Present information in an appropriate mode display, print. Recognise security risks, take online precautions.	**Unit 1, 3**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	It is strongly suggested that his Unit be delivered in a holistic manner to allow candidates opportunities to practice, apply, and be assessed in the use of ICT in other Units within the programme of study.
Unit No 11 Land–based Engineering: An Introduction: Electrics and Hydraulics	Interpret simple electrical and hydraulic schematic diagrams. Test fundamental electrical and hydraulic systems on Land-based equipment	**Unit 4, 17**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This is a practical Unit which would normally be delivered in a workshop/laboratory environment. Learners will use recognised schematic diagrams to build operational electrical and hydraulic circuits. Learners will carry out electrical and hydraulic system testing on Land-based equipment.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 12 Land–based Engineering: An Introduction: Thermal Joining and Cutting Processes	Set up welding equipment. Use oxy-fuel gas welding, cutting, and heating equipment. Produce welds using Manual Metal Arc (MMA) welding equipment. Produce welds using Metal Inert Gas (MIG) welding equipment. Produce soldered joints.	**Unit 7**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	It is suggested that this Unit be delivered following (Engineering workshop skills). Practical exercises should be set to allow candidates opportunities to practice welds, cuts, etc over a period of time.
Unit No 13 Work Experience	Develop planning, organisational, investigative, interpersonal skills, and self-awareness through organising and undertaking a work experience placement. Contribute to the planning and arrangement of a work experience placement. Carry out allocated tasks under supervision. Relate effectively to others in the analysis, planning, and undertaking work experience and identify the contribution of the knowledge and skills gained to self.	**Unit 1, 10, 18, 20**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	It is strongly suggested that his Unit is delivered in terms 2 and 3 to allow candidates opportunities to experience real work. It is intended to provide candidates with a practical opportunity to establish themselves with a potential future employer.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 14 Local Investigations	Developing planning, organisational, investigative, interpersonal skills and self-awareness, and an understanding of aspects of the local area through investigation activities. Review personally, the contribution of the knowledge and skills gained through a local investigation to own social development.	**Unit 1, 10, 18, 20**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This could be a visit to look at how a land-based engineering dealer operates, looking at the company structure, franchises, and customer support. Candidates could go to a machinery auction market/trade show **-** this could be assessed by learners providing a report or presenting an overview of their experiences.
Unit No 15 Lifting And Handling Skills	Manual lifting techniques posture and balance; selection of route for safe movement of materials. Use of slings, harnesses, shackles, hooks, chains, and ropes, knots and lashings. Identification of defects. Stacking techniques. Manoeuvring equipment. Lifting equipment: manual, electrical and hydraulic. Use of hand signals and manoeuvring instructions. Precautions applicable to overhead and dangerous loads. Loading and use of transporting equipment: trucks, trailers, and mobile cranes. Hand signals to assist a qualified fork-lift truck operator. Safety precautions applicable to equipment and work areas.	**Unit 5, 8,11, 16, 17, 19**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 16 ATV Operations	Carry out pre-safety checks and operations. Identify and describe the function of all controls of an ATV. Operate, ride, and drive an ATV. Operate and ride an ATV with a trailer.	**Unit 4, 15**	Candidates should provide performance evidence to demonstrate their knowledge, understanding and/or skills in relation to the Outcome and Performance Criteria.	This Unit is practical and deals with the operation of ATVs – Essential areas to be covered include carrying out pre-safety checks and operations, identifying and describing the function of control parts, operating, riding, and driving an ATV, also operating and riding an ATV with a trailer.
Unit No 17 Tractor Operations 2	Describe the layout, function and basic operating principles of tractor components. Carry out operations which require the use of all external services on a tractor. Carry out operator adjustments, maintenance, and service tasks within a 250 hour period. Explain the factors which affect the efficiency of tractor operation.	**Unit 4, 5, 6**	Candidate evidence must be in the form of performance, written and/or recorded oral evidence with an observation check list for practical assessments.	This Unit should be delivered to allow candidates opportunities to experience real field work. It may, where applicable, be complimentary to the land-based machinery introduction Unit.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 18 Land–based Engineering: An Introduction: Sustainability	Describe the environmental responsibilities of the Land-based engineering industries. Manage waste produced by the land-based engineering sector. Recognise sources of energy for the land-based industries. Use energy efficiently in service engineering applications.	**Unit 1, 10**	Evidence for Outcomes 1 and 3 may comprise short answer/structured questions. Evidence for Outcome 2 should be generated as part of a programme or group of Units, which are practical in nature. Outcome 4 should comprise practical exercises.	Practical exercises, visits and investigations, should be designed to ensure candidates can gather sufficient evidence to satisfy the Outcome and Performance Criteria. Task instruction sheets, manufacturer's product literature, and record forms should be made available to candidates in conjunction with other relevant Units.
Unit No 19 Accident Prevention & Emergency Procedures	Demonstrate knowledge & understanding of principles of accident prevention in a given setting. Describe the procedures for dealing with an emergency situation in line with HSE guidelines. Demonstrate first aid procedures in line with HSE guidelines.	**Unit 1, 4, 5, 6 7, 8, 9, 11, 12, 13, 15, 16, 17**	Candidate evidence must be in the form of performance, written open-book, and/or recorded oral evidence with an observation check list for practical assessments.	It is strongly suggested that his Unit Is delivered in conjunction with practical Units to allow candidates opportunities to risk assess real work situations. Emergency procedures may be delivered as a one day emergency first aid course.

Unit	Tasks	Integration with other Units	Assessment	Notes on delivery and assessment
Unit No 20 Customer Care	Develop skills to deal with customers effectively. Develop good communication and interpersonal skills and demonstrate appropriate behaviours in dealing with a customer. Identify their needs and identifying the steps in dealing with a customer's complaint.	**Unit 1, 10**	Candidate evidence must be in the form of performance, written open-book and/or recorded oral evidence with an observation checklist for practical tasks.	It is strongly suggested that his Unit is delivered in conjunction with practical Units to allow candidates opportunities to appreciate customer care in real work situations. Learners may be able to practice customer care techniques using workshop simulation.

Appendix 3: UK Land-based Technician Accreditation Scheme (LTA)

The diagram below illustrates how the award can lead to progression into employment or further education.

The NC may enable candidates to register at LTA1. The LTA scheme was launched in 2007 as a benchmark for recognising the skill levels and competence of technicians across the land-based engineering industry. The National Certificate is an appropriate qualification at the pre apprenticeship stage and fits well with the industry career and qualification structure.