National Unit specification

General information

Unit title: Woodfuel Processing and Supply

Unit code: H6A0 46

Superclass: SG

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Version: 01

Unit purpose

This Unit will provide learners with knowledge and understanding of the processing and supply of woodfuel as a product of woodland operations. The Unit will also establish the associated practical and organisational skills which will empower learners to apply knowledge and skills to plan and process woodfuel as a product of a managed woodland.

Outcomes

1 Plan woodfuel operations.
2 Maintain and set up woodfuel processing machinery and equipment.
3 Produce woodfuel products to market specifications.

Credit points and level

1 National Unit credit value at SCQF level 6: (6 SCQF credit points at SCQF level 6)

Recommended entry

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following, or equivalent: practical skills at SCQF level 5 in Forestry or other land use areas.

National Unit specification: General information (cont)

Unit title: Woodfuel Processing and Supply

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**.

National Unit specification: statement of standards

Unit title: Woodfuel Processing and Supply

Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Plan woodfuel operations.

Performance Criteria

(a) Identify materials suitable for woodfuel production.
(b) Draw up specification for woodfuel materials.
(c) Prepare an operational plan for woodfuel processing.

Outcome 2

Maintain and set up woodfuel processing machinery and equipment.

Performance Criteria

(a) Select tools and equipment appropriate to woodfuel products.
(b) Maintain woodfuel processing machinery as per manufacturer's manual.
(c) Set up woodfuel processing site for efficient production.
(d) Work safely within industry best practice guidelines.

Outcome 3

Produce woodfuel products to market specifications.

Performance Criteria

(a) Operate woodfuel processing machinery safely and efficiently.
(b) Prepare woodfuel products for identified markets.
(c) Organise the supply of a woodfuel product for an identified market.
(d) Work safely within industry best practice guidelines.

National Unit specification: statement of standards (cont)

Unit title: Woodfuel Processing and Supply

Evidence Requirements for this Unit

Evidence is required to demonstrate that learners have achieved all Outcomes and Performance Criteria.

Outcome 1

Written and/or recorded oral evidence is required to demonstrate the candidate's ability to:

- Select woodfuel processing machinery and equipment suitable for:
  - Site conditions
  - Crop conditions
  - Woodfuel product
- Produce an annotated site plan detailing:
  - Location of processing area
  - Location of storage area
  - Transport routes
- Identify suitable species and materials for woodfuel production.

Outcome 2

Performance evidence is required to demonstrate the candidate's ability to:

- Set up woodfuel machinery and equipment in correct position for production system.
- Carry out routine maintenance checks for:
  - Fuel
  - Lubricants
  - Coolants
- Carry out maintenance schedule in accordance with manufacturer's specifications and codes of practice.
- Carry out routine tests of safety features of machinery and equipment.
- Carry out routine checks for and maintenance of site safety including as relevant:
  - Personal Protective Equipment (PPE)
  - Trip and dust hazards
  - Anti-pollution equipment
- Adjust set-up according to site conditions and woodfuel products.
- Work safely within industry best practice guidelines.

Outcome 3

Performance evidence is required to demonstrate the candidate's ability to:

- Handle timber safely and in accordance with Manual Handling Regulations.
- Operate woodfuel machinery using techniques appropriate to the woodfuel product.
- Cut woodfuel to specification.
- Check quality of woodfuel against the product specification.
- Store woodfuel products appropriately.
- Maintain site hygiene.
- Prepare woodfuel products for market in accordance with the specification.
- Work safely within industry best practice guidelines.

National Unit specification: support notes

Unit title: Woodfuel Processing and Supply

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This Unit is aligned to National Occupational Standards (NOS):

LANTw 59 Produce woodfuel in a woodland or forest

Woodfuel has become an increasingly important consideration in sustainable forest/woodland management with government energy policy concentrating on a reduction in non-renewable energy sources and a promotion of expansion in renewable energy. With this policy initiative and the strategic objectives associated with it there are now much greater opportunities for the bringing back into management neglected woodlands and the utilisation of previously uneconomic material previously considered waste.

The principal sources of woodfuel from woodlands is from previously neglected/unmanaged woodlands; coppiced woodlands grown on a woodfuel rotation 15 years, early thinnings from conifer woodlands and smaller roundwood that arise from harvesting of conifer for other products. This does not include biomass products from short rotation coppice from fast growing species, eg willow.

Management for woodfuel exclusively can be an option particularly with regard to community supply of fuelwood but it can also be an objective in the wider forest management wherein it becomes a viable minor product in the overall production of timber. It is critical that woodfuel is managed within the objective of sustainable forest management and not as the meeting of a short term need.

With small previously unmanaged or neglected woodlands woodfuel production as an objective will also provide opportunities for the re-establishment of specific habitats and ecosystems. In such instances it is important that the current environmental status of the woodland is understood and the management plan for the woodland must take this into account in its prescriptions.

The management of small woodlands must take account of a number of factors that will influence decision making on management planning. These factors will include: woodland structure, species composition and relationships, requirement for protection from browsing animals, eg deer and rabbits, individual site characteristics, eg water courses, terrain features and wider land management objectives in the area.

Within that context it is important within a wider landscape area that each individual site is assessed on its woodfuel potential and decisions made on the appropriate plan for each of the sites to be managed.

With neglected or unmanaged woodlands materials suitable for woodfuel will make up a high proportion of the produce from the area although there may well be a range of materials suitable for other uses, eg large single trees may provide a small parcel of logs that would be suitable for a small sawmill or for conversion by mobile sawmill. These more valuable logs must be identified and a plan for their processing drawn up.

Outcome 1

There are two basic woodfuel types woodchip and log and the choice between or combination of will be depended upon species, size, volume available and market.

Woodfuel for logs will be reliant on materials >10 cm long neglected coppice woodlands may contain significant numbers of large trees from unmanaged coppice with standards, trees that have grown on from coppice and self-generated trees. These trees are the trees that might be suitable for timber processing for higher value products, eg oak planks, traditional fencing materials.

Materials suitable for chipping will be restricted to the dimensions safely processed by the chipping machine. The manufacturer will give accurate information of the size of material to be processed safely by the chipper.

It is always more sustainable to transport processed materials rather than round timber because of the reduction in bulk movement and the number of round trips to achieve the same volume of product.

Market demand will be a determinant of the methods used and the products from the operation, eg whether the market favours wood chip over firewood or whether there is an opportunity to service both markets.

Whilst assessing the site for suitable materials for woodfuel other materials should also be assessed for potential products to ensure that the area provides a maximum yield.

This site analysis should result in the survey and measurement of the whole area if it is small or from sample plots if the area is larger and uniform. All materials should be measured or counted and a total yield in m^3 calculated for each of the products.

Ideally there should be no residues from the operations but there may be a requirement for disposal of small branch and twig materials. The requirement for this phase should also be assessed, ie burning, small dimension chipping machine may be required and planned for.

Small diameter material <10 cm. is not cost effective in producing woodfuel with a high demand in both time and energy to produce the same quantity of material produced quicker and at less energy cost by larger sized material.

The specification for woodfuel will be dependent on the market being supplied and the operations on the site, ie logs or chipping.

National Unit specification: support notes (cont)

Unit title: Woodfuel Processing and Supply

The specification(s) to be used should be written in as much detail as is required for the type of supply chain. Chip thickness and size; small dust particle content; long strand, % bark are all factors to be considered in drawing up a specification. Additional to these factors and of critical importance in small scale woodfuel boilers is the moisture content (MC) of the chips supplied as woodfuel. MC of above 30% will be less efficient in small boilers producing less energy and causing increased problems for the maintenance of the boiler and its processing of emissions. MC for larger industrial type boilers is less critical because they are less sensitive to MC above 30%.

Round wood to be used for chipping benefits from covered stacking to allow for air drying over a period of time. Different species have different drying speeds so separate stacking arrangement should be used. Depending on the nature of the site, removal of all cut timber from the site might be a requirement because of security reasons or the continuing management of the site therefore stacking space will be required to accommodate the produce.

There are a number of related factors that combine to determine the choice of a suitable woodfuel processing system and its operation:

- woodland type and woodfuel product
- site and management constraints
- choice of woodfuel harvesting system
- choice of extraction machinery
- market demand and infrastructure

National Unit specification: support notes (cont)

Unit title: Woodfuel Processing and Supply

Woodland type and woodfuel product:

Woodland Type	Description	Materials
Mixed broadleaved coppice	Woodfuel rotations of 15–30 years	Woodfuel
Neglected broadleaved coppice	15–50 years old mixed coppice	Woodfuel and other smaller green wood materials
Broadleaved forest crops	<40 years and <20 cm at dbh	Woodfuel + fencing materials +green wood working from thinnings
Broadleaved forest crops	>40 years and >20 cm dbh	Lop and top+ other low grade materials for woodfuel. Larger sized materials for timber + fencing materials
Hedges	Overgrown hedges with merchantable sized materials	Woodfuel + hedging restoration materials
Shelterwood	Even or uneven aged	Thinnings: lop and top+ undersized stems + other lower grade materials for woodfuel
Mature broadleaves	Woodland with >40 cm at dbh requiring management intervention	Larger sized material for timber processing + fencing. Thinnings:lop and top + other lower grade materials for woodfuel
Any broadleaved or conifer crop	Woodland under a management scheme	Thinnings + lop and top + other undersized materials

Consideration must be given to the species composition of the woodland with some species more desirable for woodfuel than others. Generally hardwoods are heavier and denser than softwoods and therefore will provide a more efficient heat over time although the caloric value of hardwoods and softwoods show little difference.

Species of choice for woodfuel are ash, beech, birch, oak, alder, hazel and hornbeam. Less desirable are poplar species, sycamore and willow where the high moisture contents leaves less bulk of dried wood for burning in relation to the drier more dense species. Conifer species will tend to be burned in closed stoves and boilers because of the explosive nature of the resins in the wood larch, pine and fir are reasonable sources of woodfuel but there will be less woodfuel for the same volume of timber.

Site and management constraints

Small woodlands, because of their restricted capacity to accommodate machinery based systems can be particularly vulnerable to environmental damage during woodfuel harvesting operations. The main threats to the environment come from:

- shortage of extraction routes to have the best option for the prevention of ground damage.
- shortage of suitable brash materials to protect the ground surface from machine travel.
- use of machinery not suited to the site, ie high ground pressure because of weight and number of wheels and too large for safe manoeuvring.
- some sites particularly coppice woodlands and other broadleaved types will have soil types that are vulnerable to damage particularly in wet weather where there is a danger of water logging on clay sites and deep rutting in brown earth sites.
- soil particle pollution of water courses.
- pollution of water courses by machinery use, ie petrol mixture, oil and diesel spillage.
- poor work practices that do not follow environment protection guidelines.

The operational plan should have as a high priority the minimising of environmental impact. Although in general these assessment will be internal in a minority of cases there may be a requirement for a formal Environmental Impact Assessment.

The protection of soil, water, flora and fauna and archaeology should form an integral part of any plan with suitable mitigation actions identified and built into the work specification.

Site Factors

The following site factors can constrain the use of machinery:

- **Ground firmness** — Assess ground vulnerability to continuous pressure from machinery extraction. This can restrict the time of working and the type of machinery used.
- **Roughness** — Measure the ground roughness ie the size and number of obstacles such as stumps and boulders.
- **Slope** — The degree of steepness of slope is a limiting factor and this particularly true of side slopes which can seriously affect the stability of high centre of gravity machines.

These are the three elements that make up the Forestry Commission's Terrain Capability model that is used for forest operations involving machinery.

Site access and characteristics

Site access — External access must be sufficient to allow for machinery to either be driven to the site or transported if necessary. In addition external access must facilitate the transportation of the woodfuel products from the operation on the site. In many cases this will employ middle to heavy goods vehicles so hard standing areas and tracks capable of withstanding such use should be in existence, created or their absence determine an alternative system. Such infrastructure creation is expensive and will compromise the cost effectiveness of the operation unless there are substantial volumes of materials for a buoyant market and which will form a permanent feature for future management of the site.

Internal access — Similarly with internal access unless there are large volumes of products to be extracted it is not cost effective to put in place an infrastructure that does not have an extended life use. Where the volume to be extracted is inadequate then alternative low impact systems should be used. Some preparation may be required at high impact points, eg where extraction routes meet forest road but such work will be dependent on alternative routes; area to be harvested; extraction distances; payload size and overall volume to be extracted in this operation and other forecasted volumes.

Extraction distance — Long distances can significantly influence machinery choice so site layout should have as a priority the minimising of extraction distances to keep extraction costs as low as possible. Unless market prices are exceptional extraction distances should not exceed 250–300 metres.

Volume per hectare — Yield and extraction distances are strong determining factors for the system and machinery choice and in the case of high yields and larger scale machinery this can have deleterious effect on ground condition causing unacceptable levels of damage. Alternative routes will need to be considered or more environmentally sensitive machinery.

Form of materials — Different materials for conversion may affect the choice of extraction machinery or system. For example,in large broadleaved woodlands crowns cannot be extracted without in- wood processing by chainsaw and in woods with long whole poles extraction cannot be done by shortwood working forwarders.

Product mix and numbers of products — If the product mix is such that similar sized products are created then extraction is simple and straight forward and no load differentiation needs to be considered as they can be taken out in mixed loads and sorted at roadside — a much quicker operation. If products are variable, for example sawlogs, stakes and crown wood, each may have to be extracted separately. There is also the risk of part loads which will increase the cost of extraction to the point where it is uneconomic and also increase the pressure on the site with added trips to achieve the same volume.

Roadside conversion space — With woodfuel harvesting, some degree of roadside conversion is required and space for this phase of the operations has to be planned and prepared in advance of the operation. Stacking space for haulage is also required and some sites will prove problematic because of a lack of suitable space. In some cases ground may have to cleared specifically for the creation of safe and sufficient stacking space.

In general terms, all of the above will be major economic and logistical considerations in any woodfuel system and operation.

Health and Safety

Each different woodfuel harvesting and processing system will have its own particular safety requirements and for the machinery used. For specific machine-related information, refer to the respective supplier, agent, manufacturer and the Arboriculture and Forestry Advisory Group (AFAG) guides. Consideration must be given to operator training, safe working practices and manual handling. Three main aspects need to be considered to create a safe working environment and optimal conditions for efficient work:

- a well-planned operation on a suitably organised worksite.
- the use of appropriate and well-maintained equipment.
- employing well-trained operators familiar with the machine(s) in use and the personal, protective equipment (PPE) required.

The scale and nature of some operations often requires the use of modified agricultural equipment as the most cost-effective means of harvesting woodfuel products.

Such equipment must comply with all machine regulations.

The main Health and Safety legislation covering the use of these machines is:

- The Provision and Use of Work Equipment Regulations 1998 (PUWER).
- The Management of Health and Safety at Work Regulations 1999 (MHSW).
- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER).

Site and operation risk assessments should be carried out by the responsible manager to cover all planned operations. It is legal requirement that the risks associated with the site and the operations must be must be communicated to all workers. (The Management of Health and Safety at Work Regulations).

The risk assessments should identify the action needed to eliminate or control risks, including:

- Any hazards associated with the site.
- The suitability of the machine for the process or operation.
- The safe, ongoing management of operators, workers, haulage contractors and the public who may approach sites.

Outcome 2

The tools and equipment appropriate for the production of woodfuel will depend on the type of woodfuel being produced, ie firewood or wood chip.

National Unit specification: support notes (cont)

Unit title: Woodfuel Processing and Supply

Outcome 3

Firewood can be harvested and processed in a number of ways using a variety of tools and equipment from hand tools used for occasional firewood processing for domestic consumption to firewood processors which combines cutting, splitting and moving firewood.

With the use of hand tools it is important that attention is paid to the care and maintenance of the tools to ensure they are fit for purpose, eg firewood splitting axes should be designed for that purpose and shatter/breakage resistant materials used in the shaft. Hand saws should be sharp well maintained and used in conjunction with a saw horse.

Splitting blocks should be at an appropriate working height for the operator.

Wedges and spitting tools should have wooden or non-metal shafts for striking with sledgehammer.

Chainsaws for cross-cutting of firewood should comply with current safety legislation and operated by certificated operators with full compliance with current PPE requirements.

The size of chainsaw and bar must be suitable for the size of the material being processed.

Circular sawbenches are fast and efficient converters of firewood and can be self-powered or PTO driven from a tractor Unit. Such equipment is expensive and only suitable for larger scale operations or where there is a repeated programme of firewood production. Such machinery is suitable for cooperative working in neighbouring small woodlands.

Log splitters are used for larger scale commercial or community operations whereby a large amount of medium to large logs require processing. These are much faster and more efficient that hand splitting and generally use hydraulic power to split either vertically or horizontally. They are used in conjunction with a cross cutting device either chainsaw or sawbench. Bulk firewood supply must be flexible to client requirements for size species and quantities.

There are small mobile firewood processors increasingly available for small businesses supplying commercial quantities of firewood. These consist of machines that combine cross cutting to log size by chainsaw or circular saw and splitting of logs by hydraulic blade or mechanical screw. They may also incorporate a small conveyer belt which will transfer logs to a storage area or to a vehicle for transport to storage.

With the use of such machinery it is essential that only trained personnel operate them and that personnel under training are closely supervised and are trained at an appropriate trainer to trainee ration, ie no greater than 1:4.

The manufacturer's specifications must be followed for maintenance and operation It is essential that all guarding and safety devices meet regulatory and legislative requirements and that the machines at all times comply with these. The operator should carry out regular and routine safety checks throughout the working day and only operate the machinery when satisfied that it is safe to do so.

National Unit specification: support notes (cont)

Unit title: Woodfuel Processing and Supply

All operations should be carried out using best practice techniques as initiated and developed through training.

PPE should as a minimum meet the manufacturer's specification and should be replaced on life cycle or abnormal wear basis.

Best practice guidelines should be available at all times to operators and routine supervisory health and safety checks carried out on employees or contracted labour.

Seasoning of firewood is essential for efficient burning and maximum heat generation. The length of seasoning will depend on species and size of log. One year's seasoning is sufficient for lighter less dense woods eg hazel, birch, sycamore or the majority of softwoods, whereas a minimum of 2 years seasoning should be planned for in using denser woods, eg oak, beech, elm, holly and yew.

Seasoning of firewood for commercial activities demands significant space and may have to be transported off site to leave the woodland to regenerate and to prevent disturbance of wildlife and habitats.

Similar considerations must be made in the production of wood chips for woodfuel and careful planning must be made for the seasoning or drying of the wood to be processed and the wood chips after processing. Moisture content for this form of woodfuel should be 20–30 %. In order to ensure this is achieved round timber should be stacked and covered for a minimum of 1 year. This will require a considerable amount of space with a small scale enterprise requiring c 70–100 tonnes of timber per annum to deliver 150–250 m^3 wood chips. Obviously larger and multiple customer supplies will require substantial stacking and storage space.

For that reason the production and supply of wood chips as woodfuel is not suitable for small scale energy supply but more suited for large scale domestic use, eg large country houses or small to medium enterprises.

Machinery required for such supply will consist of harvesting, primary processing and extraction equipment, mobile wood chipper and transportation for chipped materials.

All such machinery should be selected for its suitability for the woodland and the materials to be processed.

Wood chippers come in a wide variety of specifications and power Units from tractor driven to self-powered and the small to medium sized enterprises will be operating machines that handle materials from 10–50 cms. Smaller sized materials if it makes up the bulk of the material to be processed will show a poor return for the input of time and energy. Larger sized materials will tend to be handled by specialist enterprises resourced for large scale provision and utilisation.

Wood chipping whilst it can be done in the woodland is more suited to a specific area are aside for stacking, processing and transportation of wood chips to market or drying shed.

As with other processing machinery the power Unit and chipper must be legally compliant, be maintained and operated to the manufacturer's specification and produce the quality of chip required. Particular attention must be paid to safety and emergency stop devices to ensure that they are functioning correctly. Routine checks are an essential part of the working regime.

All machinery should be operated by trained personnel and in learning practical skills the ratio of lecturer to learners should be a maximum of 1:4.

Guidance on approaches to assessment of this Unit

Outcome 1 is primarily woodland based and the essential site analysis and planning is supported by short introductory lectures with site layout and working plans being developed within the classroom and supplemented by exemplars on the VLE system.

Site analysis and planning is initiated by a decision making chart in which the variables for the site and the activity are factored into the decision making.

Outcome 2 is best approached by a combination of short, introductory lectures accompanied by short films/videos of woodfuel systems and machinery. Students should then participate in practical skills learning and experience on site and with a range of suitable tools, equipment and machinery. Practical exercises on set up and maintenance should be structured with the aid of guide notes and instructional check lists. There is scope for the videoing of set up and the creation of a practical skills portfolio of set up and operation.

Outcomes 3 is also practical-based, taking place in a woodland, with demonstrations sessions to include: the identification of a selection of appropriate tools and equipment, safe work techniques, logical operations' planning to maximise efficiency of production, the techniques of cross cutting, splitting, chipping, stacking, storage and manual lifting and handling.

Identification of appropriate sized material related to products and specifications for firewood and/or wood chips for woodfuel.

This is Unit that lends itself to development for blended learning with scope for the use of digital mapping 3D imagery and the creation of a virtual coppice woodland to explore its potential development and its use as a source of sustainable woodfuel.

Guidance on approaches to assessment for this Unit

This Unit is a blend of practical skills and operational planning and thus will benefit from a blend of teaching and learning methodologies. The introduction to woodfuel processing and supply could be through the use of instructional technique videos which give detailed descriptions of machinery and their application. It is important that the selection of machinery reflects site analysis and product specification, eg firewood, woodchip or a combination of both. Workshop sessions are used for an introduction to tools and equipment and for the teaching of maintenance and repair of tools and machinery. Woodland practical sessions are critically important in learners developing knowledge and understanding of the working environment and it is important that the learning site is a working site.

National Unit specification: support notes (cont)

Unit title: Woodfuel Processing and Supply

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferrable to work or further and higher education.

Practical skills development is achieved through demonstration and instruction with supervised experiential learning. The planning of the woodfuel area area is introduced through site analysis and digital mapping through GPS and GIS software to create a clear site plan matched to the production system appropriate to the site and the woodfuel products from the woodland.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at **www.sqa.org.uk/e-assessment**.

Given the practical nature of this Unit is does not easily lend itself to e-assessment. E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Opportunities for developing Core and other essential skills

There will be opportunities to develop Core Skills in this Unit although there will be no direct certification of any of the Core Skills.

Communication at SCQF level 6 and *Information and Communication Technology (ICT)* at SCQF level 5 can be developed through the work and studies done to create a site plan and working system prescription. The practical layout and operation of the woodfuel production site also creates the opportunity for the production of a demonstration and practical skills development portfolio.

The organisation of the site and its operations will provide opportunities to develop skills in *Working with Others* and *Problem Solving* at SCQF level 6. In order to have an organised site and an efficient, safe and productive site teamwork and trouble free operations are essential.

History of changes to Unit

Version	Description of change	Date

General information for learners

Unit title: Woodfuel Processing and Supply

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

On completion of this Unit you will have developed an understanding of how materials are selected and processed for use as woodfuel. You will also develop your knowledge of the machinery and equipment used to process woodfuel and how to do so safely in accordance with industry best practice. Finally you will be able to apply these knowledge and skills to produce woodfuel products ready for market.

You will likely be assessed in this Unit through a mixture of observation of your practical work and completion of the type of documentation required within the industry such as specifications of materials and operational plans.

In addition to the sector specific knowledge and skills developed in this Unit you may also have the opportunity to develop the Core Skills of *Communication, Information and Communication Technology (ICT)* and *Problem Solving*. The use of industry guidelines and best practice will also give you experience of how this type of work is carried out on a commercial basis.