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**LEVEL 2 AWARD
IN
CHAINSAW AND RELATED OPERATIONS (QCF)**

CS50 –Techniques for dealing with damaged trees
(Pre requisite: CS30 and CS31)

This unit covers damaged tree operations using a chainsaw with a max guidebar length of 18 inches.

ASSESSMENT SCHEDULE

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NPTC LEVEL 2 AWARD IN CHAINSAW AND RELATED OPERATIONS (QCF)

CS50 – Techniques for dealing with damaged trees

Introduction

The scheme is administered by NPTC

NPTC will:

- Publish
 - scheme regulations
 - assessment schedule
 - assessment material
- Approve centres to co-ordinate and administer the scheme
- Set standards for the training of Verifiers and Assessors
- Recruit, train and deploy Verifiers
- Manage verification
- Issue certificates to successful Learners

The Certificate of Competence/ID Card

Certificates of Competence/ID Cards will be awarded to learners who achieve the required level of competence in the Units to which their Certificate relates.

Instruction

Attendance at a course of instruction is not a pre-requisite to an application for an assessment but potential Learners are strongly advised to ensure that they are up to the standard that will be expected of them when they are assessed.

NPTC does **not** hold a register of instructors; however instruction will normally be available from recognised training providers and/or centres of further or higher education active in the areas covered by this certificate. Further information on training may be obtained from the local Assessment Centre.

Access to Assessment

Assessment Centres will be responsible for arranging assessment on behalf of a learner. Assessment may only be carried out by an Assessor approved by NPTC for that scheme. Under no circumstances can either instructor's involved in the preparation of learners, or the learners work place supervisors, or anyone else who might have a vested interest in the outcome, carry out the assessment.

The minimum age limit for Learners taking certificates of competence is 16 years. There is no upper age limit.

Assessment

Assessment is a process by which it is confirmed that the Learner is competent in the Units within the award to which the assessment relates. It is a process of collecting evidence about his/her capabilities and judging whether that evidence is sufficient to attribute competence.

The learner must be registered through an NPTC approved Assessment Centre for this qualification prior to assessment.

The schedule of assessment contains the criteria relating to:

- Observation of practical performance
- Assessment of knowledge and understanding

When all the criteria within the Units for which assessment has been sought have been completed the result(s) will be recorded on the Candidate Assessment Report Form(s).

Performance Evaluation

The result of each assessment activity is evaluated against the following criteria:

- 4 = Meets or exceeds the assessment criteria by displaying a level of practical performance and/or underpinning knowledge, with no 'minor' or 'critical' faults. (Competent).
- 3 = Meets the requirements of the assessment criteria for both the practical performance and the underpinning knowledge, with some 'minor' faults but no 'critical' faults. (Competent).
- 2 = Does not fully satisfy the requirements of the assessment criteria, being unable to perform the practical task satisfactorily or being deficient in underpinning knowledge leading to the recording of minor faults. (Not yet competent).
- 1 = Does not satisfy the requirements of the assessment criteria, being unable to perform the practical task satisfactorily or safely or being deficient in underpinning knowledge leading to the recording of a critical fault. (Not yet competent).

A list of registered Assessment Centres is available from NPTC. (www.nptc.org.uk)

Verification

Verification is a process of monitoring assessment; it is an essential check to confirm that the assessment procedures are being carried out in the way that NPTC has laid down. The overall aim of verification is to establish a system of quality assurance that is acceptable in terms of both credibility and cost effectiveness.

Approved Assessors will be subject to a visit by the Verifier at a time when assessments are being undertaken.

A selection of assessment reports completed by the assessor will be evaluated by NPTC.

Compliance with the verification requirements is a pre-requisite for Assessors remaining on NPTC's list of approved assessors.

Safe Practice

At all times during the assessment, the chainsaw and other equipment must be operated in a safe manner in accordance with industry good practice, whatever the task being carried out.

1. Assessors must hold a current 'First Aid at Work' Certificate.
2. It is strongly recommended that Learners hold at least a recent, recognised 'Emergency First Aid' Training Certificate.
3. All chainsaws used in the assessment must comply with Arboriculture and Forestry Advisory Group (AFAG) Safety Guide 301 in terms of safety features, and be a model and size suited to the task(s) required.
4. Recommended guidebar lengths should be observed, although variations may be accepted at the discretion of the Assessor where this is appropriate to the task.
5. Learners should be familiar with the saw that they are going to use.
6. A spare working chainsaw must be available.
7. Appropriate Personal Protective Equipment (PPE) must be worn at all times. All PPE used must comply with AFAG Safety Guide 301, Health and Safety Executive publications and current legal requirements in terms of specification and use.
8. A First Aid kit meeting current regulations, of the appropriate size for the number of persons on site, must be available.
9. The learner must be equipped with a personal first aid kit.
10. The Assessor must ensure a Risk Assessment has been carried out, and sufficient control measures implemented. In particular, the location of the site and weather conditions should be assessed, details of access, etc, which may be required by emergency services must be noted, as well as the nearest Accident and Emergency Hospital Unit. The means of contacting the emergency services must be established.
11. Manual handling techniques must comply with current legislation.
12. Any necessary permission must have been granted, and notifications made as appropriate: (e.g. Local Planning Authority, Forestry Commission, Forest Enterprise, Highways Authority, Private owners, Statutory undertakers, Police, etc).
13. All equipment being used for this assessment must comply with relevant requirements of the Provision and Use of Work Equipment Regulations (PUWER) 1998. And where appropriate, Lifting Operations and Lifting Equipment Regulations (LOLER) 1998.
14. Information may be sought from the relevant operator manuals or any other appropriate training or safety publication.
14. The current Regulations for transport, handling and storage of fuel and oils must be complied with.
15. Provision must be made to avoid the risk of environmental pollution.
16. It is the responsibility of the Assessor and the Learner to ensure that any additional requirements and provisions are met as relevant to this qualification.
17. Learners must ensure they are complying with the relevant legislative requirements applicable to the work being carried out
18. If required, relevant records must be accurately kept
19. Appropriate steps should be taken to maintain effective teamwork in respect of other persons on site during the assessment. This may include taking steps to ensure effective communication and safety precautions.
20. At all times during the operation, learners must act in a way so as not to endanger themselves, the assessor or any other person or equipment. Work must be carried out to achieve the requirements of the assessment criteria in accordance with all relevant and current legislation and good practice guidance (e.g. INDG317, Chainsaws at Work, AFAG Guides 306 and 310).

If these conditions are not observed this may result in the Learner not meeting the required standard.

Complaints and Appeals

NPTC and its Assessment Centres have a formal Complaints and Appeals procedure. In the event of any dissatisfaction with the arrangements and conditions of assessment, the learner should first contact the Assessment Centre through whom the assessment was arranged and submit the complaint in writing.

For further information on NPTC's Equal Opportunities Policy and Complaints and Appeals Procedures, please refer to www.nptc.org.uk

Learning Outcomes

The learner will be able to:

1. Identify the Risk Assessment and Emergency procedures on a work site
2. Prepare a site to work on damaged trees
3. Prepare chainsaw for operation
4. Restrain a root plate of a damaged tree with a hand winch and sever the root plate
5. Dismantle branches from a damaged tree
6. Fell a damaged tree

The assessment contains six parts:

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|--------|---|
| Part 1 | Preparation |
| Part 2 | Sever individual uprooted trees using a chainsaw |
| Part 3 | Restrain root-plates on individually uprooted trees using a hand operated winch |
| Part 4 | Remove branches by de-limbing |
| Part 5 | Felling leaning or part uprooted trees |
| Part 6 | Felling tree with significantly broken crown using winch or pull rope |

Both the root-plates may need to be restrained depending on the available trees.

The damaged trees will be up to one guidebar length in diameter. It is acceptable to set up trees to help with site selection IE, pull or push over trees so root plates are exposed.

Part 6 may be felling average, i.e. between 300-380mm at felling height, tree on site with the help of pulling kit if snapped out tops are not present.

The trees will not be in a position that requires assistance from emergency services or utility companies

Learners must successfully achieve all assessment activities unless otherwise specified.

Qualifications and Credit Framework (QCF) – credit value

The Award in Damaged Tree Techniques has a credit value of 3 credits on the QCF.

Assessment and site requirements

- Rear handled chainsaw in good condition, maximum recommended guidebar length: 450mm (18") appropriate to size of tree
- Sufficient fuel and oil for the assessment, appropriate to saw model
- Appropriate felling aids (e.g. felling lever)
- An adequate tool kit for field maintenance
- In addition to the relevant requirements of the Provision and Use of Work Equipment Regulations (PUWER) 1998, any ancillary equipment used for this assessment must also comply with relevant requirements of the Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 where applicable.
- Winching equipment appropriate to tree size and site (minimum 1.6 ton straight-line pull)
- Minimum of 3 fully uprooted tree less than 18" in diameter at severing point
- Minimum of 1 partly uprooted or heavily leaning trees less than 15" in diameter
- Minimum of 1 trees with snapped tops less than 15" in diameter
- Broadleaf (or trees/ tops with broadleaf 'form') for branch removal
- Hand-operated winch to have a safe working load/working load limit of 1.6 tonnes in a straight line pull

Unit 50: techniques to work with damaged trees	
Part 1: Preparation for damaged trees operation	
ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
1. Select and wear Personal Protective Equipment (PPE)	<p>PPE in accordance with health and safety requirements and Risk Assessment e.g.</p> <ul style="list-style-type: none"> - Chainsaw safety trousers - Chainsaw safety boots - Safety helmet - Eye and ear protection - Gloves appropriate for the task - Non-snag outer clothing - Personal First Aid Kit - Whistle
2. Check site for hazards	<p>Hazards to be identified:</p> <ul style="list-style-type: none"> - Roads - Footpaths - Utilities - Weather - Wildlife - Other - Walk site and identify hazards - Assess the risks - Remove hazard or implement appropriate control measures - Confirm that the site is acceptable for the operation - Report to the appropriate person if site or equipment is unsuitable - Hazards to be reported to the relevant authority - Work may not commence until the hazard is made safe - Operators maintain appropriate safe working distances from hazard - Reduced communication - Generator noise interference - Shadows - Reduced light - Trip hazards e.g. light cables, broken off branches/ wood <p>Demonstrate knowledge of what hazards may be encountered when working at night</p>
3. Demonstrate knowledge of legal and environmental considerations when dealing with damaged trees	<ul style="list-style-type: none"> - Wildlife & Countryside Act 1981. - Countryside & Rights of Way Act 2000 - Highways Act 1980 - Town & Country Planning Act 1990 (TPO & Conservation Areas) - The Forestry Act 1967 as amended
4. Prepare the site to work on damaged trees	<ul style="list-style-type: none"> - Remove debris, branches, climbing vegetation, scrub and other obstructions from around the tree and compact vegetation to facilitate access - Inspect the tree and adjacent trees for dead wood, insecure branches or other objects - Ensure no Overhead Power Lines or other utility services are in the vicinity of the working area - No unauthorised person within two tree lengths or twice the length of the product whichever is greater - No personnel below tree or root-plate on slopes - No persons within danger triangle when off set winching - Establish escape routes for chainsaw operator (and winch/rope man when appropriate) - Inspect tree for side tension - Signs must be erected warning others of the work being carried out - Additional measures taken if the public are likely to enter established exclusion zones - Contact made with the appropriate authorities where site specific hazards such as powerlines may interfere with work activity
5. Prepare chainsaw for operation	<ul style="list-style-type: none"> - Chain tension and condition checked for safe and effective use - Safety features checked for condition and function - External nuts and bolts checked for security - Chainsaw contains sufficient fuel and chain oil for operations

Unit 50: techniques to work with damaged trees	
Part 2: Sever individual uprooted trees using a chainsaw	
ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
1. Demonstrate knowledge of tension and compression in timber when severing root plates	<ul style="list-style-type: none"> - Tension in timber can be very high in either top, bottom or side depending on how the stem is supported - Tension and compression can change dramatically in different positions up the stem away from the root-plate - Compression cuts are always made first followed by tension cut stepped towards the piece that is likely to move the least - A reducing cut on ('far') side of the tree will be required if the tree is greater than guidebar length in diameter - Side tension may be present if trunk twisted or deformed when damaged
2. Sever the root-plate from stem using appropriate cuts	<ul style="list-style-type: none"> - Ensure there is no risk to the operator from the root-plate rolling or falling or the stem springing (including sideways) - Identify tension and compression in stems and select severing methods which is appropriate to tree size and condition - Ensure tree and root-plate are in a safe condition to enable subsequent operations - Clearly marked as a hazard if cannot be adequately controlled - Timber under very heavy tension may require alternative severing cuts to be made - Step cuts should be no closer than 25mm
3. Demonstrate Knowledge of when it is appropriate to use aid tools when severing root plates Demonstrate knowledge of where winches may also be used when severing root plates	<ul style="list-style-type: none"> - Use of a wedge to release compression - Use of lever to ensure stem severed - Use of turning strap to ensure stem severed or to roll - Use of tongs/ hooks for moving lighter material for access - Used for restraint of trees with side tension - Used where the stem is likely to roll - Stabilising large crown parts - Winch restraint of a root-plate may be necessary
4. Leave root plate in safe condition	<ul style="list-style-type: none"> - As far as practicable re-bury root plate - Root plates may need moving mechanically to be made safe after severing - Winch may be needed to place root plate in hole - Root plate to be taped off with hazard tape and warnings posted if not possible to make fully safe immediately

Unit 50: techniques to work with damaged trees	
Part 3: Restrain root-plates on individually uprooted trees using a hand operated winch	
NOTE: An uprooted tree must be used that could or could not need the root plate restrained. A full winching set up must be deployed as way of demonstration.	
ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
1. Select and inspect winch and ancillary equipment and comment on condition and compatibility	<ul style="list-style-type: none"> - Check for signs of damage or fatigue to all equipment and reject if damaged - Ensure winch, strops, chokers, winch rope, cable fittings, shackles, pulleys or other ancillary equipment are compatible - Winch overload prevention device in place - Check winch components secure - The safe working load (S.W.L.) limit or pulling capacity of the winch should be known - Safety features of the winch (e.g. shear pins) are identified e.g. <ul style="list-style-type: none"> • Bending handle • Shear pins • Controlled reverse - SWL of strops or slings used in various configurations must be known - A pulley of known SWL can be used to increase the winching capacity or divert the pull - Examination scheme under Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 may be required on winching equipment that is used to restrain a heavily overhanging root-plate (e.g. a tree uprooted downhill on a steep slope)
2. Inspect uprooted tree, site and anchor point(s) and comment on system to be set up	<ul style="list-style-type: none"> - Planning of site and location of any offset/ redirect pulleys required - Communication between winch operator and the chainsaw operator established - Prepare site by removing obstacles at work position and behind root-plate to route winch cable - Establish escape route as appropriate - Anchor point bearing capacity adequate for weight of tree and root-plate - Allowance made for any shock loading that may be applied to the system, especially on slopes - Capacity and configuration of strop compatible with load to be applied - Escape route available for winch operator - If a tree is used as anchor point, chainsaw operator in a safe position in case of anchor point failure
3. Attach winch cable to uprooted stem using strop or choker in appropriate position and configuration	<ul style="list-style-type: none"> - Selection of strop/ choker and method of attachment on stem correct - Method to prevent cable cutting through root plate used if appropriate - Placing of off-set/ redirect pulley if required - Maintaining own safety in close proximity to tree
4. Demonstrate knowledge of when offset winching should be used and additional precautions required	<ul style="list-style-type: none"> - If terrain or safety factors prevent a straight line pull - Safety factors prevent a straight line pull - If the work method deployed means winch and chainsaw operator need to be visible to each other - When offset winching <ul style="list-style-type: none"> • the bearing capacity of anchor points, straps, shackles, pulley/snatch back etc, must be appropriate for the potential load to be applied to all points of the system - The exclusion zone within the bight of the winch cable must not be entered - If a tree is used as an offset/ redirect pulley anchor, the winch and chainsaw operations must be in a safe position in case of anchor point failure

Unit 50: techniques to work with damaged trees	
Part 3: Restrain root-plates on individually uprooted trees using a hand operated winch	
NOTE: An uprooted tree must be used that could or could not need the root plate restrained. A full winching set up must be deployed as way of demonstration.	
ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
5. Demonstrate knowledge of suitability of snatch blocks/ pulleys Tension winch if used to restrain a forward weighted ('overhanging') root plate	<ul style="list-style-type: none"> - Snatch block diameter in relation to manufactures recommended bend ratio - Sheave size in relation to rope diameter - Pre-tension cable fully prior to severing root-plate - Position strops in relation to where cuts to be made - Identify risk zones - Root plate restrained adequately
6. Sever tree from root plate	<ul style="list-style-type: none"> - A reducing cut is made on the 'far' side of the stem (if needed) - Relieving cut made in to compression wood - Severing cut made in to tension wood leaving a minimum step of 25mm to leave the saw on the part that will move the least - Ensure strop / choker avoided when making cuts - Use escape route(s) as necessary - Root plate winched over as appropriate and left in a safe and stable condition
7. De-tension and dismantle the winch system and make tree and root plate safe	<ul style="list-style-type: none"> - Any tension in the system released in a safe and controlled fashion - Make sure root plate and tree stem are in a safe and appropriate position - Dismantle, inspect, clean and stow winch system components

Unit 50: techniques to work with damaged trees	
Part 4 Remove branches by de-limbing	
ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
1. Identify safety points when planning the branch removal procedure	<ul style="list-style-type: none"> - Beware of falling over or into hidden obstacles - Avoid chainsaw bar coming into contact with obstruction causing kick back injury or saw damage - Plan sequence of work so that an escape route is available at all times - Only one person to work on the timber attached to the crown - Ensure that bystanders and other operators are kept at a safe distance - Never work under a felled tree - No use of saw above shoulder height - Ensure crown is in a stable condition before any cutting commences - Use of winch or suitable rope for stabilising or turning crown if necessary - Spring back from cut branches or saplings when severed - Tree rolling onto operator if working on lower side of tree on a slope
2. Breakdown the crown	<ul style="list-style-type: none"> - Small branch wood removed before cutting main branches as appropriate - Work only from compression side of branches under severe 'side' tension - Compression and tension forces are assessed and appropriate cuts used - Brush and timber is processed and stacked as work progresses appropriate to the method of disposal - Heavy branches gradually reduced in length - Work inwards carefully to deal with ascending and overhanging branches on the upper side of the crown - Do not work under overhanging limbs - Retain main supporting branches on stem - Roll the trunk with a winch to bring branches over shoulder height to a safe cutting level - Sequence of cuts and position of the saw to remove branches is appropriate for the branching habit - Saw is switched off or chain brake applied before clearing severed branches
3. Leave site in tidy condition	<ul style="list-style-type: none"> - Ensure no branches are left on fences, paths, roads, timber stacks, young trees etc. or in ditches, ponds, waterways etc - Brush stacked tidily, if appropriate, ready for subsequent handling (e.g. for a wood chipper)

Unit 50: techniques to work with damaged trees	
Part 5: Felling Leaning or part uprooted trees	
ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
1. Prepare site and review risk assessment	<ul style="list-style-type: none"> - Ensure adequate escape routes - Give due regard to all users of the site including other workers - Review all controls before commencing work
Comment on timber characteristics & describe cuts to be used	<ul style="list-style-type: none"> - Consider behaviour of root plate on severing - Note ground conditions close to root-plate before & after severing - Behaviour of different species making note of species that split easily e.g. ash, willow, poplar - Select appropriate felling cuts (Bore with dog tooth hold / Double 'V' / Danish)
2. Demonstrate knowledge of the consequence of not using the correct technique to fell a tree that is weighted in the felling direction or partially uprooted	<ul style="list-style-type: none"> - The tree can split and hit the operator - The tree can split and throw the chainsaw - A spur or root can fly up and hit the operator - Root plate may behave in unusual fashion
3. Fell leaning or partially uprooted specimen	<ul style="list-style-type: none"> - Determine felling method and safe working zones - Select and prepare escape route(s) - Prepare a sink of the correct dimensions - Keep head and body away from rear of tree - Sever appropriately, e.g.: <ul style="list-style-type: none"> • Bore in from the side of the tree behind the sink to leave an adequate hinge • Cut away from the hinge to leave a 'hold' at the rear • sever the 'hold' - A hinge is retained of adequate dimensions, as appropriate - Appropriate aid tools are used safely if required to fell tree - A prepared escape route is used as soon as the tree begins to fall - Site checked for safety once tree has fallen - Due consideration to root plate movement during and after severing is made

Unit 50: techniques to work with damaged trees	
Part 6 Felling tree with significantly broken crown using winch or pull rope	
ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
1. Demonstrate knowledge of felling broken trees and hung sections	<ul style="list-style-type: none"> - Difficulty in establishing felling momentum - Broken sections falling out of trees - Lack of directional control with bare poles - Sections bouncing when felled - Risk of structural damage to timber giving unpredictable felling response - Broken section falling on operator
2. Demonstrate knowledge of methods of dealing with a broken tree section lodged in or on a standing tree	<ul style="list-style-type: none"> - Attach winch cable to broken section and pull out if possible - Use of winch to assist felling operation so operative can be out of danger area before the tree falls - Fell to side ensuring that hung section is on opposite side from operator (choose felling direction to minimise risk) - Severing broken top at point where it reaches the ground when appropriate - Utilising access method such as MEWP so arboriculturalist can safely secure and/or remove parts
3. Prepare site Select a suitable felling method and prepare a damaged / broken tree with a pulling system	<ul style="list-style-type: none"> - Review risk assessment and carry out all necessary controls before commencing work - Ensure adequate escape routes - Give due regard to all users of the site including other workers - Consider potential behaviour of damaged tree & broken crown parts - Appropriate pulling direction and pulling method selected - Adequate pulling equipment with compatible components selected - Ensure secure placement of pulling line/winch over suitable branch, fork, etc. - Appropriate anchor point selected - Appropriate knots & non - return used with rope systems - Winch or pull-line operator must not be in the danger zone - Offset used where appropriate e.g. on slopes - System 'tested' before 'live' use to ensure its security
4. Fell tree using a winch or pull-line	<p>Appropriate felling method selected:</p> <ul style="list-style-type: none"> - Preparation of escape routes - Appropriate selection of anchors and height of attachment of pulling system - Felling cuts made correctly including adequate hinge - Felling lever/ or wedge deployed - Winch or pull line used correctly - Anticipate movement of hung up parts when felling - Direction and accuracy of fell - Fully utilise appropriate escape route in a timely fashion. - Felled broken tree / stub is made safe - pulling system is retrieved, checked and stowed correctly