02 HEALTH AND SAFETY IN AERIAL FORESTRY AND ARBORICULTURAL OPERATIONS

Use of this worksheet

This worksheet is part of a series of interactive worksheets that has been produced in association with Husqvarna to support the delivery of training for the City & Guilds (NPTC) suite of chainsaw qualifications.

Content

This worksheet covers the following outcomes:

Be able to work safely
Know relevant health and safety legislation and industry good practice

Chainsaw Safe Practice (*General Guidance*)

At all times during training and assessment, equipment must be used in accordance with industry good practice, whatever the task being carried out.

1. Trainers and Assessors must hold a current 'First Aid at Work' Certificate. It is recommended that all Trainees/Candidates hold as a minimum a current Emergency First Aid Certificate
2. All chainsaws used in assessments must comply with relevant Arboriculture and Forestry Advisory Group (AFAG) guidance and HSE Chainsaws at Work INDG317(rev1), in terms of safety features, and be a model and size suited to the task(s) required.
4. Recommended guide bar lengths should be observed, although variations may be accepted at the discretion of the Trainer or Assessor where this is appropriate to the task.
5. Trainees/Candidates should be familiar with the machinery, equipment and tools that they are going to use.
6. During chainsaw based training and assessment a spare working chainsaw must be available.
7. Appropriate Personal Protective Equipment (PPE) must be worn at all times by the Candidate, Trainer and the Assessor. All PPE used must comply with relevant AFAG guidance, industry good practice, 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, along with appropriate fire fighting and suitable welfare facilities e.g. hand cleansing wipes.
9. The carrying and use of personal first aid kits must comply with current industry good practice.
10. The Trainer or Assessor must ensure a site specific risk assessment has been carried out, sufficient control measures implemented and appropriate emergency procedures recorded. All recorded risk assessment information should be clearly legible and accessible to candidates and completed for all locations where assessment activities are scheduled to take place.
11. Manual handling techniques must comply with current legislation and industry good practice.
12. Any necessary permission must have been granted, and notifications made as appropriate.
13. All equipment being used for this assessment must comply with legislative requirements and in particular relevant requirements of the Provision and Use of Work Equipment Regulations (PUWER) 1998.
14. Information may be sought from the relevant operator manuals or any other appropriate training or safety publication.
15. The current regulations for transport, handling and storage of fuel and oils must be complied with.
16. Provision must be made to avoid the risk of environmental pollution.
17. It is the responsibility of the Trainer, Assessor and the Candidate to ensure that any additional requirements and provisions are met as relevant to this qualification.
18. At all times during training and assessment, Candidates must act in a way so as not to endanger themselves, the Trainer / 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.
19. If required, relevant and accurate records must be kept.
20. Appropriate steps should be taken to maintain effective teamwork in respect of other persons on site during the assessment.
21. Any appropriate item of machinery complying with current legal requirements is acceptable for training and assessment, provided it is suitably equipped for **all** training and assessment activities to be carried out.
22. **A breach of Health and Safety that puts any person at serious risk during the training or assessment process may result in the training or assessment being immediately terminated.**

The statistics

In forestry and arboriculture (between 2004/05 to 2010/11) chainsaws caused **5 deaths.** In forestry in the five years up to March 2012 there was an average of 10.4 fatalities per 100,000 workers. This is more than three times the fatality rate for the construction industry. **Source FISA 2012**

An outline of key health and safety legislation and industry good practice

There are a number of key pieces of legislation, Approved Codes of Practice (ACoP's) and recommendations from industry, that together provide comprehensive guidance.

Legislation

Legislation places a legal duty on everyone to comply; failure to do so may result in criminal prosecution. Therefore it is important that you know your obligations under relevant pieces of legislation that may impact on you and your work.

The Health and Safety at Work Act 1974 (HSWA)

It places general obligations on:

Employers	
Employees and the self employed	
Employers, the self employed and employees	

It also states that; ***anyone who recklessly interferes with or misuses anything provided as a legal requirement for health, safety or welfare reasons is liable to prosecution.***

The Management of Health and Safety at Work Regulations 1999 (MHSWR)

The purpose of the MHSWR is:

Lifting Operations and Lifting equipment Regulations 1998 (LOLER)

LOLER applies to anyone who controls or manages any type of lifting operation. It was originally designed to ensure that operations are properly planned, lifting equipment is used in a safe way and it is examined thoroughly by a properly qualified person as specified (every six months). In addition it requires that correct measures are taken to ensure that the load **(which may be the climber)** does not fall. (e.g. supplementary anchor points should be employed when working in a tree).

LOLER require that:
List below any other activities that you may be required to carry out before using ropes and harness for arboriculture operations.

Important Note:

Under the **Lifting Equipment Regulations (LOLER) 1998** all equipment must be examined by a competent person ***every six months*** and records kept.

The Health and Safety Executive has recently advised CITY & Guilds NPTC that:

"Defective equipment which is found through inspections does not appear to be [being] reported to HSE; this is a legal requirement on the competent person. See *Regulation 9 (c) where there is in his opinion a defect in the lifting equipment involving an existing or imminent risk of serious personal injury, send a copy of the report as soon as is practicable to the relevant enforcing authority".*

The Working at Height Regulations 2005 (WHR)

This is an important piece of legislation which relates to some arboriculture operations.

WHR require that:

The Manual Handling Operations Regulations 1992 (MHOR)

MHOR require that:

Provision and Use of Work Equipment Regulations 1998 (PUWER)

The important aspects of PUWER are:

Personal Protective Equipment at Work Regulations 1992 (PPEWR)

PPEWR Regulations require:
all PPE must comply with and must be ____ marked

The basic requirements for PPE for chainsaw operations are outlined in AFAG 308. Further details will be found on pp17-19.

The Control of Noise at Work Regulations 2005 (CNWR)

CNWR requires:
employers to prevent or reduce risk to health and safety from exposure to noise; employees must

The Control of Vibration at Work Regulations 2005 (CVWR)

CVWR requires that:
employers assess the risks and eliminate or reduce risk of vibration, in particular to hands and arms. *(This will reduce the incidence of Hand-arm Vibration Syndrome (HAVS) and other issues such as "White finger".*

You should be aware that other legislation may have implications for some arboricultural operations, including:

- **The Wildlife and Countryside Act 1981 and the Wildlife and Countryside (Amendments) Act 1991**
  Examples of specific wildlife which may be affected are: bats, red squirrels and nesting birds.

- **Town and Country Planning (Tree Preservation) (England) Regulations 2012**
  Before considering felling or doing remedial works to any tree it is worth checking for Tree Preservation Orders with the local tree officer to ascertain its status.

Approved Codes of Practice (ACoP's)

These do not place a legal duty on everyone to comply, but they do give sound practical advice on how compliance with legislative requirements can be achieved. However it should be noted that if it is proved in court that a person has not followed an ACoP they may be deemed to have contravened the HSWA.

The Purpose of the Arboriculture Forestry and Advisory Group (AFAG)

AFAG
Arboriculture and Forestry Advisory Group

AFAG is an advisory group of the Health and Safety Executive's (HSE's) Agriculture Industry Advisory Committee (AIAC).

The main committee role is to consider and make recommendations to AIAC and HSE on:

- Identifying and controlling all major areas of risk to health and safety arising from work activities in forestry, arboriculture and the transport of timber in the forest.
- Implementing the HSE's current strategy for workplace health and safety in Great Britain.
- Helping achieve the targets set by Government to reduce injuries, ill health and days lost.

There are a number of important AGAG advisory leaflets which can be downloaded from http://www.hse.gov.uk/treework/resources/afag.htm

Note: The Forestry Industry Safety Accord (FISA) has been recently been signed. The Accord is led by a steering group made up of members of leading industry organisations and working groups of practitioners and experts.

FISA has a plan of action covering 2012/13. By the end of 2012 the industry intends to take ownership of the HSE guidance publications. FISA intend to have re-issued these by the end of 2012.

Identifying hazards and risks associated with the working area and the proposed work

The Management of Health and Safety at Work Regulations 1999 (MHSWR) places an obligation on employers to ensure that risk assessments are carried out. These identify the possible hazards, quantify the risk and outline what precautions and control measures need to be put in place. (The HSE leaflet INDG 163 rev 3 provides some excellent guidance in assessing risks in the workplace).

For clarity:

- a **hazard** has the potential to cause harm
- a **risk** is the likelihood of harm.

Follow the **five steps** in the HSE leaflet: Five Steps to Risk Assessment.

1. **Identify the hazards**
2. **Decide who might be harmed and how**
3. **Evaluate the risks and decide on precaution**
4. **Record your findings and implement them**
5. **Review your assessment and update if necessary.**

For the purpose of training you are required to complete the table below which identifies the hazards, the risks and control measures for the site and task identified to you by your trainer.

Hazards	The risks	Control measures

Outline the emergency procedures relevant to the working area

As part of the risk assessment activity, emergency procedures should be considered and recorded. They need to be understood by everyone and each person should have a copy to refer to in the event of an emergency. Typically it is a list. **Under the direction of your trainer complete the following table for the site you will be working on.**

Type of information required	Details
Location name	
Grid reference (include letters)	
Designated meeting place (useful in remote areas)	
Site location name	
Nearest access point	
Street name / district	
Type of access (public road/light vehicles, four wheeled drive)	
Suitable helicopter landing area	
Phone number of nearest doctor	
Location of nearest accident and emergency hospital and phone number	
Manager's contact number	
Your own contact number	
Other information	

Carrying out a hazard evaluation of a specific tree and a working at height assessment prior to the commencement of the work

Before any work commences it is essential that a hazard evaluation is carried out. This is basically a visual assessment of the tree.

Hazards for climbing arborists may include any of the following:

- **decay the signs may be cavities or fungi**
- **deadwood**
- **hanging or nested broken branches**
- **dead or flaking bark**
- **v shaped unions**
- **cracks in the bark or fractured timber**
- **nesting insects, hornets, bees or wasps**
- **the presence of power lines**
- **the presence of telecommunication lines**
- **targets and obstacles underneath the tree**
- **damaged roots, unstable tree**

In addition a “working at height assessment” needs to be carried out.

- **First of all, can working at height be avoided? Could the work be carried out using for example a pole pruner?**
- **Secondly, instead of climbing could other work equipment be used to carry out the task, e.g. a mobile elevated working platform (MEWP)?**
- **Lastly, the use of work equipment or other measures to minimise the distance and consequences of a fall (e.g. tree climbing)**

Overleaf is a table detailing the possible hazards which may be encountered by a climbing arborist. For each description listed, match the picture.

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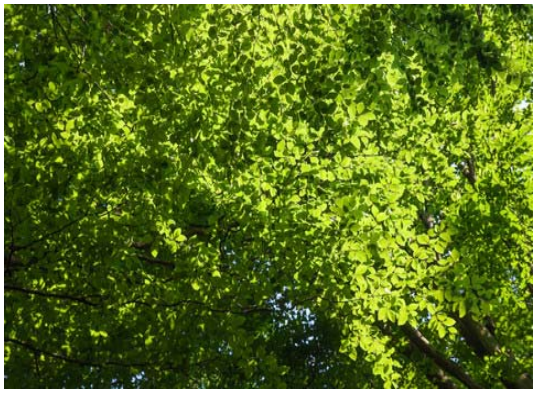
No.	Description	Match the picture to the description
1	Pollarding indicated by a change in stem diameter; decay may be present hidden by new growth.	
2	Leaves (or needles on conifers) dead or dying can indicate root decay or death.	
3	Power or telecommunication lines.	
4	A weak fork (poor crotch angle) may be structurally weak. Decay can develop in cracks in bark.	
5	A hanging or nested branch – a 'widow maker'.	
6	Canker; perennial or target cankers can result in weakness of the branch and death.	
7	Break out cavity caused by a branch breaking off. Decay can often develop in the wounds.	
8	Abrupt bends where branches have broken or they have been pruned. Decay may be present.	
9	Hornets, bees and wasps.	
10	Loose bark coming away from the stem may indicate decay/rotten wood underneath.	
11	Fungi and fruiting bodies are indicators of decay on the stem and roots of the tree.	
12	A crack in the soil after rain indicates an unstable tree moving in the wind.	
13	Basal cavities are serious especially if between one or more buttresses.	
14	Damaged roots may lead to dieback and serious problems with stability.	

How the species, condition of tree and time of year can affect the work

In addition to the hazards already identified above, other factors can create hazards.

For each of the pictures below and overleaf explain how it may affect climbing.

Picture	Affects on climbing
	Trees with brittle timber e.g. *Salix fragilis, Robinia pseudoacacia*
	Dead, diseased or dying trees
	Trees in full leaf, dense canopy

Picture	Effects on climbing
	Wind
	Wet or icy branches and extremes of cold
	Irritants – pollens and ‘dusts’ e.g. deposits from *Platanus x hispanica*

The potential for environmental damage

There is an enormous potential to cause considerable environmental damage during felling and harvesting activities. The damage can take a number of different forms, including:

- _ _ _ _ _ _ **to retained trees**
- **soil** _ _ _ _ _ _ _ _
- **soil** _ _ _ _ _ _ _ _ _ _ **(from heavy machinery / equipment)**
- _ _ _ _ _ _ _ _ _ _ _ _ _ **of the land/soil from** _ _ _ _ _ _ _ _ _ _ **spillage of fuel/oil**
- _ _ _ _ _ _ _ _ **of watercourses**
- _ _ _ _ _ _ _ _ _ _ _ _ _ **of water courses**
- **damage to** _ _ _ _ **or** _ _ _ _ _ _ _ _ _ **flora**
- _ _ _ _ _ _ _ _ **disturbance**
- **outbreaks of** _ _ _ _ **(where spark arresters are not fitted to machine exhaust systems)**
- _ _ _ _ _ _ _ _ _ **from incorrect methods of waste disposal**

Legal and environmental factors relating to felling trees

There are a number of legal factors to consider in relation to tree felling; these may include:

- _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ **may be required**
- **Tree** _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ **(TPO's) may be in existence for the tree to be felled**
- _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ **– the tree(s) to be felled may be in a conservation area**

When planning to fell individual trees or a larger forest area, you will need to take the plants and animals that live in the area into consideration.

There may be plants or wildlife present which could be protected under the Wildlife and Countryside Act 1981; an offence could be committed if they are damaged or disturbed.

How environmental damage can be caused and minimised

New chainsaws are more fuel efficient (with up to 20% savings) and some have up to 75% less emissions. By using alkylate petrol, such as' Aspen'; you can lower the amount of harmful emissions from your chainsaw. There is also vegetable chain oil that is biodegradable and therefore more environmentally friendly than conventional oils. If you are currently using a petrol/oil can with top-up protection, this also prevents unnecessary waste.

Complete the following table providing details of how environmental damaged is caused and how it can be prevented *(continued overleaf).*

Causes of environmental damage	How the damage can be prevented
Defective machinery	
Incorrect storage of fuel and oil	
Blocking watercourses	
Disturbing wildlife	
Poor working practices	
Poorly trained operators	
Damage to retained trees	
Soil erosion	
Soil compaction	

Causes of environmental damage	How the damage can be prevented
Contamination of the land/soil	
Contamination of watercourses	
Damage to rare or protected flora	
Outbreak of fire	
Pollution from incorrect methods of waste disposal	

Waste disposal

All waste that is produced is required to be disposed of in line with legislation, good practice and/or any additional site requirements that may be in existence.

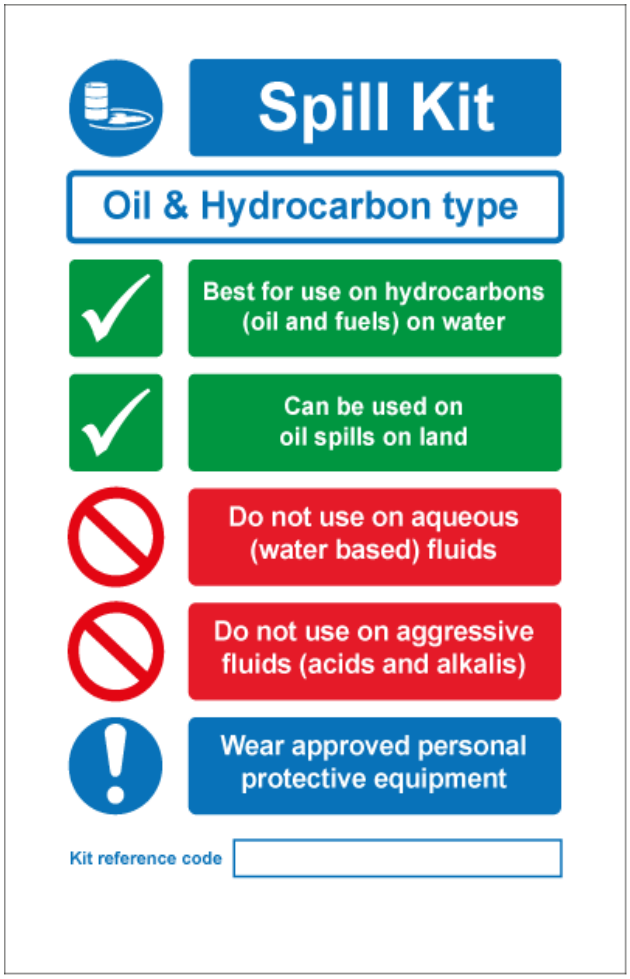
For the examples in the table overleaf, describe methods of disposal that meet legislative requirements and are examples of good practice.

Waste Product	Description of correct method/ or methods of disposal
Cordwood	
Brash	
Stumps	
Broken machines, items of equipment	

Waste Product	Description of correct method/ or methods of disposal
Empty containers	
Waste oil/fuel	
Machine washings	
Litter	

Accidental spillage

There are occasions when an accident occurs (something which was unavoidable). In these circumstances the spillage needs to be dealt with as rapidly as possible to minimise environmental impact. The correct way to do this is with the use of a spillage kit. These come in different sizes and are manufactured to cope with different types of spillage.



Describe below the actions you can take as an operator to minimise the possibility of a spillage.

When it would be appropriate to contact the Emergency Services

Explain when it would be appropriate to contact the emergency services in the space below, right.

Working in a way that maintains health and safety and is consistent with relevant legislation and good practice

During training, assessment and in the working environment it is essential that all activities that are undertaken are carried out in a way that protects you the operator and those around you.

You have already covered the basics in health and safety legislation, industry good practice and hazard and risk assessment; however you need to undergo specific training for the tasks that you will be carrying out as a forestry or arboriculture aerial worker. Recognised training may culminate in testing to prove that you have reached minimum standards and you may receive a certificate as proof. It should be remembered that this is only the beginning and you will be required to undertake refresher training to ensure that you remain safe and maintain good working practices; typically this will be every three years.

Use appropriate tools, equipment and Personal Protective Equipment (PPE)

The following tools and items of equipment **may** be required by an aerial worker. ***Name all of the items in the pictures below and overleaf.***

Personal Protective Equipment (PPE)

The requirements for PPE are outlined in AFAG 308. You should remember that PPE is the last line of defence and no PPE can guarantee total protection. This is especially true in respect of cuts from chainsaws.

All items of PPE should comply with legislative requirements, be of a specific standard (either European or British) and carry the CE Chainsaw logo.

Draw the CE Chainsaw Logo

Complete the following table which contains details of PPE. You need to state why each item is required.

Item of PPE	Reasons for use
	

Item of PPE		Reasons for use
	Safety helmet complying with BS EN 397 Eye protection complying with BS EN 1731 Hearing protection complying with BS EN 352-1	
	Gloves complying with BS EN 381-7	
	Leg protection complying with BS EN 381-5	**Type A or C?**
	Protective high visibility jacket complying with BS EN 381-5	
	Or “chainsaw” boots?	

Notes

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