

THEORY PART
ECC 1: Chainsaw Maintenance and Crosscutting

ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA	
1. Observe safety precautions and wear appropriate PPE	<p><i>For maintenance activity footwear with toe protection, work gloves as appropriate to task and non-sag clothing is sufficient.</i></p> <p><i>When starting and checking operational functions of saw, full PPE as outlined in accordance with national safety guidance MUST be worn</i></p> <p><i>Candidate to explain why the PPE is required</i></p>	<p>PPE for maintenance should include:</p> <ul style="list-style-type: none"> - Safety boots - Work gloves as appropriate to task - Eye protection as appropriate (Mandatory for airline use) <p>- Washing facilities / wet wipes in case of petrol / oil / sap etc contact with skin.</p> <p>- All debris resulting from cleaning operations is correctly disposed of.</p> <p>PPE for starting and operating chainsaw should include:</p> <ul style="list-style-type: none"> - Chainsaw boots - Head, ear and eye protection - Chainsaw trousers - Non-sag outer clothing - Personal first aid kit
1. Carry out daily and weekly maintenance, settings and pre-start checks as per manufacturers' recommendations 2. Maintain the safety and security of chainsaw(s) and other equipment	i.	Practical
	ii.	Practical
	iii.	Practical
	iv.	Practical
	v. Demonstrate knowledge of information required to select a replacement chain for a given saw	<p>Guide bar, sprocket and chain must be compatible, as shown in manufacturer's charts, in relation to:</p> <ul style="list-style-type: none"> - Chain pitch - Gauge/thickness of drive links - Number of drive links/chain/bar length - Cutter type
	vi. Demonstrate knowledge of reasons for chain maintenance	<p>Filing angles</p> <ul style="list-style-type: none"> - Enhances cutting performance - Working corner must be properly sharpened <p>Cutter length</p> <ul style="list-style-type: none"> - Cutter length directly affects cutter height - Variations can lead to: <ul style="list-style-type: none"> - Increased vibration - Reduced efficiency - Saw not cutting in straight line - Increased risk of kick back - Uneven wear of bar <p>Depth gauge setting</p> <ul style="list-style-type: none"> - Reduces risk of kick back - Reduces risk of chain breakage - Reduces chain vibration and thus the risk of Hand - arm vibration damage - Reduces excessive wear on chain components - Achieves optimum cutting speed
	vii.	Practical
	viii. Demonstrate knowledge of reasons for maintaining guide bar	<ul style="list-style-type: none"> - Reduce vibration and allow straight cutting - To prevent burr formation - Prevent over-heating - Allow lubrication of chain - Reduce sprocket wear - Bar turned to maintain even wear - to rectify wear or damage that may be encountered - to check for the acceptable limits of wear before replacement is necessary
	ix.	<ul style="list-style-type: none"> - Ideal ratio: 1 sprocket to 2/3 chains for both Rim sprocket and Spur sprocket
	x. Check and comment on clutch components	<p>Visual check of</p> <ul style="list-style-type: none"> - Springs - Bearing - Body & weights - Needle bearing lubricated in accordance with manufacturers guidance
	xi.	practical

	xii. comment on chain tension	<p>Chain too tight:</p> <ul style="list-style-type: none"> - Wear on bottom of tie straps and cutter body - Slow pick-up on acceleration - Power loss on small engine saws - Damage to sprocket and bearings - Over heating bar and chain - Excessive wear on bar and rails <p>Chain too slack:</p> <ul style="list-style-type: none"> - Wrong cutting angle - Excessive vibration - Increased risk of chain derailing - Wear on rivets and heel - Excessive wear between bar rails - Increased wear at topside of bar on entry and underside of bar at nose sprocket - Chain creep at tick over/throttle idle
	xiii. Clean power unit and covers and inspect for damage	<ul style="list-style-type: none"> - Debris removed from fins/air intake - External screws, nuts and bolts present and secure - Remove chain / bar side cover to clean and check components revealed, including oil-ways - All damaged, missing or worn components replaced as necessary or report defects as appropriate
	xiv. Clean air filter and compartment and explain the purpose	<ul style="list-style-type: none"> - Needs to be clean to maintain air/fuel ratio and therefore performance - Filter cleaned using brush or washed in water with detergent then dried - Airline can be used with appropriate eye protection
	xv. comment on condition of spark plug	<ul style="list-style-type: none"> - If fuel or oil rich, plug dark brown to black: engine cokes / oils up - If fuel starved, plug light brown to white: engine can seize from overheating
	xvi. comment on cord condition of recoil starter mechanism	<ul style="list-style-type: none"> - Cord inspected for wear especially at <ul style="list-style-type: none"> - Base of toggle - At attachment to pulley wheel - Check for symptoms of under or over tightening: <ul style="list-style-type: none"> - slack spring: Cord does not fully retract - Over tight spring binds before cord fully extended
	xvii. Check and/or clean / replace fuel filter	<ul style="list-style-type: none"> - Fuel cap removed - Filter located visually (using appropriate tool if required) - Condition of filter determined - Cleaning procedures or replacement as appropriate
	xviii.	Practical
	xix. Check chainsaw for condition and pre-use operational safety	<ul style="list-style-type: none"> - If chainbrake fails to function correctly, label saw, e.g. 'Not to be used - defective chain brake' - Saw checked for oiling function (e.g. oil throw test or oil present on drive links) - Chain becomes stationery when throttle released - On / off switch is working (pull choke to stop if not, then label not to be used)
	xx.	Practical
	xxi. Check components of chain oiling system as appropriate and comment on their function	<ul style="list-style-type: none"> - Check and clean oil-ways - Check and clean bar mating surfaces - If chain does not oil during operation: <ul style="list-style-type: none"> - Check there is oil in tank! - Clean oil tank filter as appropriate - Adjust flow rate as appropriate - If still not oiling do not use and label saw, e.g. 'Not to be used - defective oiling'
	xxii. Demonstrate knowledge of symptoms associated with poor cutting performance	<ul style="list-style-type: none"> - Wood dust being produced by blunt saw - Fine chips produced if depth gauges not lowered - Saw may cut in a curve if teeth are different lengths or blunt on one side - Vibration (or kick back) during cutting because of poor sharpening angles and/or too low depth gauge setting
3.	Practical	

4. Safeguard and maintain your own health and safety and that of those likely to be affected by your work	i. Demonstrate knowledge of the safety considerations required during crosscutting.	<ul style="list-style-type: none"> - The minimum safe working distance from other people is 5 metres . - The chain brake is used appropriately during cross cutting operations if the operator is walking, if saw has to be put down or before taking a hand off the saw - Avoid chainsaw bar coming into contact with ground or 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 - Never work below timber on a slope - Ensure timber is in a stable condition before any cutting commences
5. Maintain effective teamwork when working with others	i. 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.	
6.	Demonstrate knowledge of how to remove a trapped saw	<ul style="list-style-type: none"> - First switch off engine and/or apply chain brake - Lever or lift the timber up / down to open the kerf - Drive a wedge (not steel) into closed kerf - Use another saw to free the trapped saw, cutting the timber at least 300mm from trapped saw
	ii. Demonstrate knowledge of the alternative methods of carrying out a boring cut and the safeguards required. Demonstrate knowledge of the risks associated with using long chainsaw bars to cut small diameter timber Demonstrate knowledge of methods required for cross cutting timber of greater diameter than the chainsaw bar	<ul style="list-style-type: none"> - Use pulling chain - Use pushing chain - Greater risk of guide bar hitting the ground or operators leg under. - Risk of kickback - Change to larger chainsaw/ guide bar - Roll timber over - Cut from both sides
8.	Practical	

ASSESSMENT ACTIVITIES	ASSESSMENT CRITERIA
What the chainsaw operator must know and understand:	
a. How to identify hazards and comply with the control measures of risk assessments wr pr/or Explain how to identify hazards and comply with the control procedures of risk assessments	Risk Assessment should cover the following: <ul style="list-style-type: none"> - Sites (information from walking the site and Site Specific Risk Assessment documentation) - Tasks (information from job specification / method statements, safety guides) - Machines (information from manufacturer's guidance / industry guidance notes) Risk Assessment should: <ul style="list-style-type: none"> - Identify significant hazards - Evaluate the risks and to whom - Indicate control measures required - Be written down - Be communicated to all other operators and reviewed / monitored
b. Emergency planning and procedures wr or	EMERGENCY PLANNING Emergency Planning information should include: <ul style="list-style-type: none"> - Location name (Site location name, Street name/district) - Grid reference - Designated meeting place (useful in remote areas to guide the emergency services to the worksite) - Nearest access point - Type of access (public road/light vehicles, four-wheel drive) - Suitable helicopter landing area - Location of nearest Accident and Emergency hospital and Phone number - Manager's contact details (Radio call sign / Phone number / Mobile number) - Your own contact number / Mobile number

<p>c. The implications of terrain, ground conditions, season, weather and species</p> <p>wr pr/or</p> <p>Describe the implications of terrain, ground conditions, season, weather and timber type and condition</p>	<p>Appropriate PPE / additional clothing may be required for:</p> <ul style="list-style-type: none"> - identify dry or fungus infested timber - Thorny / shattered timber that can cause injury - Tree saps that may be toxic material - Contamination of ground or timber by harmful material e.g. sewage / waste / rat urine - Weather becomes very cold or very wet <p>Additional precautions may be required if:</p> <ul style="list-style-type: none"> - Weather becomes to windy in the specific situation - Dry conditions create a Fire hazard - Working above, below or on slopes / steep ground - Working in very hot or dry conditions - Ground frozen or obscured by snow - Harmful insects are present - Working near waterway lakes / ponds / boggy ground - Branches / crown overhead is dead / brittle / storm damaged / squirrel damaged / snow lade
<p>c. Causes of, and how to prevent, potential pollution and environmental damage</p> <p>Wr pr</p>	<p>Spillage of environmentally hazardous liquids eg: petrol, diesel, urea can:</p> <ul style="list-style-type: none"> - Cause harm to the environment (particularly aquatic plants and animals) - Contaminate drinking water supplies. - Cause hazards to human health <p>Plan and set up and use fuelling and maintenance points in secure areas</p> <ul style="list-style-type: none"> - All debris resulting from cleaning operations is correctly disposed of - pollution control equipment should be available on site (e.g. spill kit) - Vegetable chain oils are not toxic to the operator or plants and pose less of a hazard to the environment <p>An appropriate fuelling site would be:</p> <ul style="list-style-type: none"> - A safe distance from buildings - In a shaded area away from work and equipment - A safe distance from any source of ignition - Away from a main fuel store - A position selected to minimise damage to the environment <p>Emergency procedures should be put in place and followed if there is a spill.</p> <ul style="list-style-type: none"> - minimise any pollution incident - Any major incidents should be reported to the relevant environmental agency or Emergency Services
<p>d. How to identify your own capabilities and limitations as operator</p> <p>Wr Pr</p> <p>The principles of safe/ergonomic manual handling techniques whilst crosscutting under guidebar length in diameter</p> <p>How to apply ergonomic working methods and the implications of manual handling regulations</p> <p>How to move or roll timber by hand and with mechanical assistance</p> <p>Wr Pr OBSERVED DURING PRACTICAL TEST</p>	<p>PPE should be:</p> <ul style="list-style-type: none"> - Identified and worn appropriately in accordance with current best practice guidance - Other PPE worn as highlighted by a Risk Assessment - Marked with an EN number - Within any date limits and undamaged - Maintained / cleaned / stored / transported correctly <p>NOISE</p> <p>Possible hazards include:</p> <ul style="list-style-type: none"> - Noise hazard to operators <p>Possible control methods:</p> <ul style="list-style-type: none"> - Avoid operation in enclosed spaces - All operators wear suitable ear protection - Rotate work with other workers or other operations - Avoid working in close proximity to machinery - Have an adequate exclusion zone for bystanders <p>VIBRATION</p> <p>Vibration is transmitted</p> <ul style="list-style-type: none"> - Into your hands and arms from hand-held powered tools (e.g. chainsaw) <p>Regular exposure to vibration can cause Hand Arm Vibration Syndrome (HAVS):</p> <ul style="list-style-type: none"> - Vibration white finger - Carpal tunnel syndrome <p>HAVS</p> <ul style="list-style-type: none"> - Affects the nerves, blood vessels, muscles and joints of the hand, wrist and arm. - May involve pain, tingling, numbness and weakness in parts of the hand - It can become severely disabling if ignored. <p>The effect is reduced by:</p> <ul style="list-style-type: none"> - Checking tools before use that properly maintained and repaired - Make sure cutting chain is kept sharp so that the saw works efficiently. - Reduce the amount of time you use a saw in one go, by doing other jobs in between <p>MANUAL HANDLING</p> <p>Reduce the risk of muscular/ skeletal injury when manually handling machinery, equipment, timber or arisings:</p> <ul style="list-style-type: none"> - Use aid tools such as timber tongs - Use safe lifting techniques (bend knees and keep back straight, etc.) - Pivot loads rather than carry them - Move the lightest pieces to the heavy pieces - Drag, roll, move end over end - Maintain correct stance when using tools (e.g. chainsaw) - Do not handle items that are too heavy or awkward - Prepare material to reduce length and/or weight if possible

	<p>FIRST AID</p> <ul style="list-style-type: none"> - Ideally a person qualified in First Aid at Work should be present as per national guidelines - A regulation First Aid Kit must be immediately available to a work team - A vehicle should always be available on site - A pairing ('buddy') system should be used - A First Aid Kit should be carried on the site (according to national standard)
<p>f. How to identify tension and compression in timber wr pr OBSERVED DURING PRACTICAL TEST</p>	<ul style="list-style-type: none"> - Tension – found on the outside edge of strained timber and when cut, the kerf opens - Compression – found on the inside edge of strained timber and when cut, the kerf closes - Important in crosscutting because the sequence of cuts should always result in the final cut being made from the tension side so that the saw does not become trapped in the kerf
<p>j. The methods and safeguards required when dismantling timber (e.g. hardwood or similar tops) with vertically aligned stems, branches or sections</p> <p>k. Precautions to take to avoid the danger of logs rolling Wr Pr</p>	<ul style="list-style-type: none"> - Tripping or falling over or into obstacles - Contacting obstructions with chainsaw causing kick back injury or saw damage - Tree rolling onto operator if working on lower side of tree on a slope. - Spring back from cut branches or saplings when severed

Critical
Major
Minor