



BC Forest Safety

Road Building Package

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Version Control

Version includes date and control number. Comment section lists a summary of changes from previous version.

Version		Comments
2024-06-26	v. 1.0	Final draft

In consultation with industry subject matter experts, the BC Forest Safety Council (BCFSC) facilitated the production of this material.

Printed copies are considered uncontrolled and may be outdated. Current versions are available from the BCFSC.

Feedback is welcome and may be sent to training@bcforestsafe.org.



Industry Toolbox

A package is the foundation document for an occupation or group of related occupations. The package provides the framework for the occupation(s) and includes:

- Occupational Analysis Chart and descriptions
- Relevant regulations
- Units of Competency which specify in terms of outcomes what is required to work effectively to a standard required by industry and regulations where applicable.

The purpose of the above documentation and process is to provide industry with a 'toolbox' that will support training and assessment of workers in the relevant occupations.



Occupation Descriptions

The following occupations are part of this package:

- Dozer Operator
- Excavator Operator
- Backhoe Operator
- Grader Operator
- Wheeled Loader Operator
- Articulated Rock Truck Operator
- Rock Drill Operator
- Blasting (Forestry Roadbuilding)

Dozer Operator

Dozer operators operate dozers to move, spread and strip earth, rock, gravel or other materials during construction and related activities. They work in the construction and maintenance of roads, bridges, airports, and utilities, and the construction of gas and oil pipelines, tunnels, buildings, and other structures.

In forestry, dozers are also used to clear brush and stumps, and to build roads and trails for logging purposes.

Excavator Operator

Excavator operators operate excavators to excavate, move, lift, strip, stockpile and place earth, rock, gravel or other materials. They work in the construction and maintenance of the following:

- ◆ Roads
- ◆ Bridges
- ◆ Airports and utilities
- ◆ Gas and oil pipelines
- ◆ Tunnels
- ◆ Buildings
- ◆ Other structures

They also operate equipment in surface mining and quarrying.

In forestry operations, excavators are also used for the following:

- ◆ Create slopes
- ◆ Construct landings and roads
- ◆ Build and deactivate trails
- ◆ Pile debris
- ◆ Relocate logs

Backhoe Operator

Backhoe operators operate backhoes to move and load earth, rock, gravel or other materials during construction and related activities. They work in the construction and maintenance of the following:

- ◆ Roads
- ◆ Bridges



- ◆ Airports and utilities
- ◆ Gas and oil pipelines
- ◆ Tunnels
- ◆ Buildings
- ◆ Other structures

They also operate equipment in surface mining, quarrying, and land clearing activities. In forestry, a backhoe is used for road maintenance and deactivation.

Grader Operator

Graders are used in civil road building, construction, and forestry applications. They are used for the following:

- ◆ Grading material
- ◆ Maintaining roads
- ◆ Removing snow
- ◆ Maintaining ditch lines

Graders can also be used for removing debris off roadways, and in extreme weather conditions including maintaining water bars.

Wheeled Loader Operator

Wheeled-loader operators operate loaders to move and load earth, rock, gravel, or other materials during construction and related activities. They work in the construction and maintenance of the following:

- ◆ Roads
- ◆ Bridges
- ◆ Airports and utilities
- ◆ Gas and oil pipelines
- ◆ Tunnels
- ◆ Buildings
- ◆ Other structures

They also operate equipment in surface mining, quarrying, and land clearing activities.

In the forestry setting, a wheeled-loader is used for handling logs in log and sort yards. A hydraulic loader is used for loading log trucks handling logs, and piling debris.

Articulated Rock Truck Operator

Articulating rock trucks are used to move material in forestry road building activities. This is generally on sub grade or unfinished roads. Rock trucks have traction capabilities that allow the vehicle to work in poor traction surface areas. Articulation capabilities allow the truck to be used on uneven topography.

Rock Drill Operator

A rock drill is a device used for penetrating rock. They can be both mechanized and hand-operated. Rock drills have specialized drill and lubrication systems to keep the drill cool. They are mainly used in road building. In forestry, rock drill operators are usually blasters as well.



Blasting

The person who conducts or directs a blasting operation; the holder of a valid blaster's certificate issued by WorkSafeBC. Blasters drill blast holes and load explosives into those holes. Blasters in the forestry setting use detonators and primers connected in series with various initiation systems. Blasters safely detonate the charges and perform post blast inspections.



Occupational Analysis Chart

This Master OAC outlines the scope of the road building occupations in the forest industry and shows the correlation between the following occupations and their competencies:

- 1. Dozer Operator (D) 2. Excavator (E) 3. Backhoe Operator (B) 4. Grader (G)
- 5. Wheeled Loader Operator (W) 6. Rock Drill Operator (RD) 7. Articulated Rock Truck (AR) 8. Blasting (FB)
- 10. All Occupations (A)

INTRODUCTION
A

Describe Forest Industry				
				1002
A				

FORESTRY OCCUPATIONAL SKILLS
B

Describe Personal and Worksite Safety				
				1003
A				

Communicate in the Workplace				
				1004
A				

Describe and Apply Workplace Attributes				
				1008
A				

Recognize Hazards Related to General Forestry				
				1005
A				

Describe Workplace Documentation				
				1006
A				

Describe Emergency Preparedness				
				1007
A				

Describe Regulations and Standards Related to Forestry				
				1036
A				

Describe Risk and Risk Control				
				1039
A				



**ROAD BUILDING
OCCUPATIONAL
SKILLS**
C

Describe Job Control and Engineering Basics					1077
A					

Describe Soils and Aggregates					1078
A					

Describe Environmental Awareness, Protection, and Enhancement					1079
A					

Recognize, Evaluate and Control Hazards Related to Road Building					1080
A					

Describe Tools and Equipment for Heavy Machinery					1081
A					

Describe General Heavy Equipment Inspection and Maintenance Procedures					1082
A					

Describe Heavy Equipment Mechanical Systems					1083
A					

OPERATE EQUIPMENT
D

Describe and Operate Dozer					1142
D					

Describe and Operate Excavator					1085
E					

Describe and Operate Backhoe					1086
B					

Describe and Operate Grader					1087
G					

Describe and Operate Wheeled Loader					1088
W					

Describe and Operate Rock Drill					1089
RD					

Describe and Operate Articulated Rock Truck					1135
AR					



GENERAL OPTIONAL E	Describe and Operate Chainsaw	1028
		FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

BLASTING OCCUPATIONAL SKILLS F	Recognize, Evaluate and Control Blasting Hazards	1163
		FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Describe Blasting Terminology and Documentation	1164
	FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Describe Tools and Equipment for Blasting	1165
	FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Describe Regulations and Standards related to Blasting	1166
	FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Describe Explosives for Blasting	1167
	FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

BLASTING ACTIVITIES G	Prepare for Blasting Activity	1168
		FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Blasting and Post Blasting Activity	1169
	FB <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



Units/Modules

The following are part of the formative assessment for general Forestry occupational skills.

Unit	Title
1002	Describe Forest Industry
1003	Describe Personal and Worksite Safety
1004	Communicate in the Workplace
1005	Recognize Hazards Related to General Forestry
1006	Describe Workplace Documentation
1007	Describe Emergency Preparedness
1008	Describe and Apply Workplace Attributes
1036	Describe Regulation and Legislation related to General Forestry
1039	Describe Risk and Risk Control

The following are part of the formative assessment for Road Building occupational skills.

Unit	Title
1077	Describe Job Control and Engineering Basics
1078	Describe Soils and Aggregates
1079	Describe Environmental Awareness, Protection and Enhancement
1080	Recognize, Evaluate and Control Hazards related to Road Building
1081	Describe Tools and Equipment for Heavy Machinery
1082	Describe General Heavy Equipment Inspection and Maintenance Procedures
1083	Describe Heavy Equipment Mechanical Systems



The following are part of the formative assessment for Blasting occupational skills.

Unit	Title
1163	Recognize, Evaluate and Control Blasting Hazards
1164	Describe Blasting Terminology and Documentation
1165	Describe Tools and Equipment for Blasting
1166	Describe Regulations and Standards related to Blasting
1167	Describe Explosives for Blasting



Dozer	Excavator	Backhoe	Grader	Wheeled Loader	Rock Drill	ART
Core Units	Core Units	Core Units	Core Units	Core Units	Core Units	Core Units
1002	1002	1002	1002	1002	1002	1002
1003	1003	1003	1003	1003	1003	1003
1004	1004	1004	1004	1004	1004	1004
1005	1005	1005	1005	1005	1005	1005
1006	1006	1006	1006	1006	1006	1006
1007	1007	1007	1007	1007	1007	1007
1008	1008	1008	1008	1008	1008	1008
1036	1036	1036	1036	1036	1036	1036
1039	1039	1039	1039	1039	1039	1039
1077	1077	1077	1077	1077	1077	1077
1078	1078	1078	1078	1078	1078	1078
1079	1079	1079	1079	1079	1079	1079
1080	1080	1080	1080	1080	1080	1080
1081	1081	1081	1081	1081	1081	1081
1082	1082	1082	1082	1082	1082	1082
1083	1083	1083	1083	1083	1083	1083
Additional Units	Additional Units	Additional Units	Additional Units	Additional Units	Additional Units	Additional Units
1142	1085	1086	1087	1088	1089	1135
Optional Units	Optional Units	Optional Units	Optional Units	Optional Units	Optional Units	Optional Units
1028	1028	1028	1028	1028	1028	1028



Standards/Guidelines

	General Forestry occupational skills
	Road Building occupational skills
	Units specific to the package
	Units that are optional depending on workplace requirements
	Units related to Forestry Blasting (Road Building)

Units of Competency define, in terms of outcomes, the skills, knowledge and attributes required to perform effectively in the workplace. They inform the development of any assessment or evidence requirement and the learning resources.



Unit	1002
Title	Describe Forest Industry
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Terminology; • Phases of Forestry; • Harvesting Methods; • Environmental and Cultural Considerations; • Types of Trees and Logs; • Transportation Methods; and • Regulations.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • There are no prerequisites for this unit.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All forest industry occupations.
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Element	Competence Outcomes
1. Terminology and Phases of Forestry	<p>1.1. Explain general terminology in the forest industry in accordance with industry accepted terms.</p> <p>General terminology may include:</p> <ul style="list-style-type: none"> • General forestry, hand falling, mechanized falling, yarding, road building, log hauling. <p>1.2. Describe the phases of forestry and forestry planning.</p> <p>Phases of forestry and forestry planning must include:</p> <ul style="list-style-type: none"> • Engineering and planning, road building, falling, yarding, log hauling, dryland sort (booming, scaling, grading), end location of product, salvage, waste management, deactivation and silviculture.
2. Forestry as a Business	<p>2.1. Describe forestry as a business in accordance with industry best practice.</p> <p>Forestry as a business must include:</p> <ul style="list-style-type: none"> • Sustainable forestry, tenures, privately managed forest lands.
3. Harvesting Methods	<p>3.1. Explain application of harvesting methods.</p> <p>Harvesting methods may include:</p> <ul style="list-style-type: none"> • Cable yarding, grapple yarding, super snorkel, long line, single tree select harvesting, helicopter, horse logging, clean up (salvaging). <p>3.2. Identify types of equipment used for mechanical harvesting.</p> <p>Equipment used for Mechanical Harvesting methods may include:</p> <ul style="list-style-type: none"> • Feller bunchers, skidders, forwarders, processors (dangle head and hot saw), delimiters, dozers.
4. Environmental and Cultural Considerations	<p>4.1. Describe environmental considerations when undertaking forestry operations in accordance with industry best practices.</p> <p>Environmental considerations must include:</p> <ul style="list-style-type: none"> • Ground and site disturbance, waterway and streams, wildlife.



Element	Competence Outcomes
	<p>4.2. Describe cultural considerations when undertaking forestry operations in accordance with industry best practices.</p> <p>Cultural considerations must include:</p> <ul style="list-style-type: none"> • First nations, government ministries.
<p>5. Types of Trees and Logs</p>	<p>5.1. Identify types of trees logged in British Columbia and their use.</p> <p>Types of trees may include:</p> <ul style="list-style-type: none"> • Douglas Fir, Larch, Pine, Spruce • Western Red Cedar and Yellow Cedar • Hemlocks and Balsam • All deciduous. <p>5.2. Describe grade of logs and their characteristics found in the worksite.</p> <p>Grade of logs must include:</p> <ul style="list-style-type: none"> • Cedar and Douglas fir poles, chip and saw logs, cull logs, cut-to-length logs, gang, high grade, mulch, peeler logs, pulp logs, shake and shingle logs, tree lengths logs.
<p>6. Transportation Methods</p>	<p>6.1. Identify transportation methods used within the forest industry.</p> <p>Transportation methods may include:</p> <ul style="list-style-type: none"> • Ground • Aviation – fixed wing and helicopter • Marine – small passenger vessel, boom boat, tug boat.
<p>7. Regulations</p>	<p>7.1. Identify regulations and legislation and how they apply in the forestry setting.</p> <p>Regulations and legislation must include:</p> <ul style="list-style-type: none"> • OHSR Part 1, 2, 3, 4, 12, 15, 16, 17, 19, 21 • OHSR 26 - Forestry.

Summary of Knowledge and Skills



<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • General forestry terminology • Phases of forestry and forestry planning • Forestry as a business • Harvesting methods • Harvesting equipment • Environment considerations • Cultural considerations • Sustainability in forestry • Types of trees in British Columbia • Grades of logs • Transportation methods • General legislation and regulations related to working in forestry.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

General Forestry Assessment Guide

<p>General Information</p>	<p>Training modules are available for this unit.</p>
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of related training module.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by:</p> <ul style="list-style-type: none"> • No evidence sign-off required.



Unit	1003
Title	Describe Personal and Worksite Safety
Document	Unit of Competency

Description	<p>This is knowledge unit about:</p> <ul style="list-style-type: none"> • Personal Safety; and • Worksite Safety.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry • All Forestry occupations as required
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Element	Competence Outcomes
1. Personal Safety	<p>1.1. Explain the use of, maintenance, and when Personal Protective Equipment (PPE) must be removed from service in accordance with safe work procedures and relevant regulations.</p> <p>Use of must include:</p> <ul style="list-style-type: none"> • Dress appropriate to the weather and work activity • Hard hat, eye and face protection, hearing protection, hand protection, leg protection, safety footwear, hi-vis apparel. <p>1.2. Explain the importance of walking in the bush safely throughout the workday.</p> <p>1.3. Explain OHSR regulation related to working alone or in isolation.</p> <p>1.4. Explain the right to refuse unsafe work in accordance with OHSR.</p> <p>Right to refuse unsafe work must include:</p> <ul style="list-style-type: none"> • What is unsafe, obligation to refuse, WSBC resolution process
2. Worksite Safety	<p>2.1. Describe shutdown criteria for weather in accordance with site conditions and environmental standards.</p> <p>Shutdown criteria for weather may include:</p> <ul style="list-style-type: none"> • Heat, cold, rain, fog, smoke, wind, lightning, frost, ice, snow, avalanches. • Break-up. <p>2.2. Describe how to control access to working area in accordance with regulation.</p> <p>2.3. Recognize safe zones and hazard zones in accordance with company policy and legislation.</p> <p>Hazard zones must include:</p> <ul style="list-style-type: none"> • Low side of equipment, well sites and pipelines, low side of worker, two-tree lengths radius from other workers and equipment, low side of log decks, uphill of active wildfire, low side of roadside debris, standing within swing radius of equipment, runaway zones, highway/public roads, blast radius, overhead hazards



Element	Competence Outcomes
	<p>(lines, rigging, trees).</p> <p>2.4. Identify common contributors, and common types of MSI in the forest industry.</p> <p>Common types of MSI must include:</p> <ul style="list-style-type: none"> • Repetitive strain injury, tendinitis, hearing loss, tenosynovitis, Raynaud’s syndrome. <p>Common contributors of MSI must include:</p> <ul style="list-style-type: none"> • Lifting, reaching, repetitive motions, cutting with the chainsaw, walking on logs and uneven terrain, vibration.

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • PPE required for the job including use, maintenance, storage, and removal • What PPE is required for the work activity • How to walk in the bush safely • Regulation related to working alone or in isolation • Regulation and process related to refusal of unsafe work • Weather related shutdown criteria • Control access to the work area • Safe zones and hazard zones • Definition of MSI • Common types of MSI in the forest industry.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

General Forestry Assessment Guide



General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence should be on record showing the outcomes have been met.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • A competency conversation is available for this unit. • This unit is required for Certificate of Qualification - Faller.
Evidence to be Assessed	<p>Minimum evidence requirements to achieve this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>

Unit	1004
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Title	Communicate in the Workplace
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Communication; and • Resource Road Signage.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry • All forestry occupations where applicable.
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Element	Competence Outcomes
1. Communicate	<p>1.1. Describe resource road communication in accordance with relevant road use procedures.</p> <p>Resource road communication must include:</p> <ul style="list-style-type: none"> • Radio frequency/channel, call procedure, road name/contact information. <p>1.2. Describe hazard communication in accordance with relevant site-specific policy and procedures.</p> <p>1.3. Describe emergency communication.</p> <p>1.4. Describe communication failure in the workplace related to operations and the means to control the hazard.</p>
2. Signage	<p>2.1. Recognize road signs in accordance with company policy and the Ministry of Forest, Lands Natural Resources Operations and Rural Development (MFLNRORD).</p> <p>Road signs may include but not limited to:</p> <ul style="list-style-type: none"> • Road name, kilometer signs, radio channels, radio call points, must call signs. <p>2.2. Recognize active area signs in accordance with company policy and MFLNRO.</p> <p>Active area signs may include:</p> <ul style="list-style-type: none"> • Hazard zones, do not enter, blasting signs, active falling area, helicopter landing areas, machinery working, call for clearance, explosive storage, environmental signs, prime contractor signs, men working, seismic crew, seismic crew ahead active falling area, and active wildfire area.

Summary of Knowledge and Skills



Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Resource road communication • Hazard communication • Emergency communication • Communication failure • Resource road signs and active area signs.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

General Forestry Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence should be on record showing the outcomes have been met.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • A competency conversation is available for this unit. • This unit is required for Certificate of Qualification – Faller.
Evidence to be Assessed	<p>Minimum evidence requirements to achieve this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign-off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1005
Title	Recognize Hazards Related to General Forestry
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Health Hazards; • Operational Hazards; and • Environmental Hazards.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry • All Forestry occupations where applicable.
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Element	Competence Outcomes
1. Recognize, Evaluate and Control Hazards	1.1. Describe the recognize, evaluate and control process.
2. Health Hazards	2.1. Describe and recognize toxins in the workplace and its effect on the worker and the means to control the hazard. Toxins in the workplace may include: <ul style="list-style-type: none"> • Pesticides, herbicides, asbestos, silica, exhaust emissions, misting, nitro glycerin, oil and gas.
3. Operational Hazards	3.1. Describe and recognize potential hazards from machines and surroundings and the means to control the hazard. Potential Hazards may include: <ul style="list-style-type: none"> • Overloading, damage to machine, injury from machine maintenance, noise from machine and vehicles, overhead hazards, danger trees.
4. Environmental Hazards	4.1. Describe hazards related to steep terrain and terrain stability. 4.2. Recognize adverse condition hazards in the workplace related to operations and the means to control the hazard. Adverse condition hazards may include: <ul style="list-style-type: none"> • After a fire, lightning blowdown, wind, earthquake, danger trees, snow, rain, fog/smoke, heat, cold, dust, exposure to sun. 4.3. Recognize wildlife and insect hazards in the workplace. Wildlife and insect hazards may include: <ul style="list-style-type: none"> • Bees, ticks (Lyme disease), bears, cougars, wolves, moose.

Summary of Knowledge and Skills



Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Recognize, evaluate and control process • General health hazards • General operation hazards • Hazards related to steep terrain and terrain stability • Adverse conditions hazards • Wildlife and insect hazards
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

General Forestry Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence should be on record showing the outcomes have been met.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • This unit is required for Certificate of Qualification - Faller
Evidence to be Assessed	<p>Minimum evidence requirements to achieve this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>

Unit	1006
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Title	Describe Workplace Documentation
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • General Forestry Documentation.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry • All Forestry occupations where applicable.
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Element of Competence	Competence Outcomes
<p>1. General Forestry Documentation</p>	<p>1.1. Describe safe work procedures and job safety breakdown documentation and how to access them in accordance with workplace policy and procedure.</p> <p>Safe work procedures and job safety breakdown documentation must include:</p> <ul style="list-style-type: none"> • Where they are located and how to access them, how often to be reviewed. <p>1.2. Identify documentation required before starting work in accordance with workplace policy and procedure.</p> <p>Documentation required before starting work may include:</p> <ul style="list-style-type: none"> • Site hazard assessment, initial safety meeting for new worksite, first aid risk assessment, emergency response procedures, working alone assessment and man check records, carbon monoxide reporting. <p>1.3. Confirm map.</p> <p>Map must include:</p> <ul style="list-style-type: none"> • Legend including direction, hazards, symbols, orientation skills, environmental constraints, scales. <p>1.4. Explain why operator manuals must be readily available.</p> <p>Operator manuals may include:</p> <ul style="list-style-type: none"> • Mobile equipment, chainsaws, vehicles, tools.

Summary of Knowledge and Skills



Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Safe work procedures • Job Safety Breakdown documentation • How to read maps • Operator manuals
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

General Forestry Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • A competency conversation is available for this unit. • This unit is required for Certificate of Qualification - Faller
Evidence to be Assessed	<p>Minimum evidence requirements to achieve this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1007
Title	Describe Emergency Preparedness
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Emergencies; and • First Aid.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry • All Forestry occupations where applicable.
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Element	Competence Outcomes
1. Emergencies	<p>1.1. Describe roles and responsibilities that may occur within the ERP including triggers.</p> <p>Triggers may include:</p> <ul style="list-style-type: none"> • Environmental emergencies, wildfire emergencies, avalanche, excessive rain, flooding, medical, landslide, excessive snowfall, windstorm, gas release, water rescue, helicopter down, vessel sinking or lost. <p>1.2. Explain incidents that must be reported immediately in accordance with WCA.</p> <p>Incidents that must be reported immediately must include:</p> <ul style="list-style-type: none"> • Fatality/Serious injury, a serious blasting incident, major structural failure or collapse, major release of hazardous substance, dangerous incident involving a fire or explosion. <p>1.3. Identify the components of an ERP and where to find and identify on site location of medical/environmental/fire emergency response plans in accordance with company policy and procedure.</p> <p>Medical/environmental/fire emergency response plans must include:</p> <ul style="list-style-type: none"> • Contact numbers or radio channel/frequency, First Aid designates, helicopter landing area coordinates, muster points, communication protocols for emergencies, outside resources for emergencies, location of emergency response equipment, worksite coordinates, access/egress routes, methods and routes to medical aid.
2. First Aid	<p>2.1. Explain First Aid procedures.</p> <p>First Aid procedures must include:</p> <ul style="list-style-type: none"> • Personnel, how to call First Aid, First Aid attendant authority, transportation of injured worker. • What and where First Aid supplies must be on site. <p>2.2. Identify specialized First Aid equipment.</p> <p>Specialized First Aid equipment may include:</p> <ul style="list-style-type: none"> • Spine board, hard and soft neck collars, splints, oxygen, EPI pen, AED, baby aspirin, naloxone. <p>2.3. Identify what First Aid requirements are needed at the workplace</p>



Element	Competence Outcomes
	<p>in accordance with workplace policy, procedure, and regulations.</p> <p>First Aid requirements must include:</p> <ul style="list-style-type: none"> • Where to find number of First Aid attendants and levels required. • When and where approved Emergency Transport Vehicle (ETV) or Mobile Transport Center (MTC) is required.

Summary of Knowledge and Skills

<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Roles and responsibilities related to the ERP in different emergencies scenarios • Incident reporting and timelines. • Components of an ERP • Location of ERP • First Aid procedures • First Aid requirements on worksite • Specialized First Aid equipment.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.



General Forestry Assessment Guide

<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence should be on record showing the outcomes have been met.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • A competency conversation is available for this unit. • This unit is required for Certificate of Qualification – Faller.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements to achieve this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>

<p>Unit</p>	<p>1008</p>
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Title	Describe and Apply Workplace Attributes
Document	Unit of Competency

Description	<p>This is a knowledge and ability unit about:</p> <ul style="list-style-type: none"> • Professionalism; • Safe Productivity; and • Physical and Mental Well-Being.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry • All Forestry occupations where applicable.
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Element	Competence Outcomes
1. Professionalism	<p>1.1. Describe why it is important to be prepared and demonstrate ability to arrive at work prepared for the task and the day.</p> <p>Work prepared for the task and the day may include:</p> <ul style="list-style-type: none"> • Task specific PPE, additional nutrition and hydration, change of clothes, task specific equipment, and site or work specific paperwork. <p>Why be prepared may include:</p> <ul style="list-style-type: none"> • Minimize operational delays, for safety, avoid being rushed, attend safety meetings, ensure tools and equipment are in working order, pre-trips. <p>1.2. Describe how to effectively deal with problems.</p> <p>Problems may include:</p> <ul style="list-style-type: none"> • Personal and interpersonal problems, problems as a result of changing work conditions. <p>1.3. Give and receive constructive feedback.</p> <p>1.4. Explain why it is important to have a good work ethic.</p> <p>Good work ethic may include:</p> <ul style="list-style-type: none"> • Self-respect/pride, respect for others/others respect for you, meet workplace expectations, deliver good product, minimize down time.
2. Safe Productivity	<p>2.1. Demonstrate ability to work in an organized manner within specific worksite requirements.</p> <p>Organized manner may include:</p> <ul style="list-style-type: none"> • Teamwork, predictability, work progressively. <p>2.2. Demonstrate ability to achieve outcomes while maintaining safe work practices.</p>
3. Physical and Mental Well-Being	<p>3.1. Explain why and demonstrate ability to be fit for work.</p> <p>Fit for work must include:</p> <ul style="list-style-type: none"> • Self-awareness, recognition of personal limitations, impairment, drugs, alcohol, nutrition, eating right. <p>3.2. Describe physical conditions that can affect ability to perform job and how to mitigate them.</p>



Element	Competence Outcomes
	<p>Physical conditions may include:</p> <ul style="list-style-type: none"> • Dehydration, frostbite, hypothermia, heat stress, fatigue/exhaustion, injuries. <p>Describe mental conditions that can affect ability to perform job and how to mitigate them.</p> <p>Mental conditions may include:</p> <ul style="list-style-type: none"> • Mental fatigue, personal problems/emotions, over/lack confidence, sleep deprivation, anger, lack of trust, depression, money stress, family stress, interpersonal behavior, bullying, aggression, target or production fixation, peer pressure, unsafe behavior of others.

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • The importance of arriving at work prepared and on time • How to effectively deal with problems • Why constructive criticism is important • Importance of good work ethic • How to work in an organized manner • Importance of achieving outcomes • Physical conditions that affect work • Mental conditions that affect work.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Be fit for work • Manage time and productivity including: <ul style="list-style-type: none"> ○ Planning, scheduling and prioritizing of time ○ Working under self-motivation or limited supervision ○ Having a positive hard-working ethic. • Achieve outcomes.

General Forestry Assessment Guide



General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence should be on record showing the outcomes have been met.</p> <p>Competence outcomes requiring “ability to” or skills must have evidence on record demonstrating competence multiple times in a variety of contexts and may be holistically assessed with relevant work activities.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Training audit/competency check tool is available for this unit. • A competency conversation is available for this unit. • *Skills to be assessed or “ability to” for this unit are holistically assessed with the summative practical tool.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable. • All required “skills to be assessed” demonstrated multiple times in a variety of contexts. Valid evidence must be on record through training audit/competency check tool.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>

Unit	1036
Title	Describe Regulations and Standards Related to General Forestry



Document	Unit of Competency
Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Regulations and Legislation related to Working in Forestry
Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All forestry occupations where applicable.



Element	Competence Outcomes
1. Legislation	<p>1.1. Describe the purpose of the Workers Compensation Act 21 - 26 and where it can be accessed.</p> <p>1.2. Describe the Wildfire Act and how it affects forestry operations.</p> <p>1.3. Explain the purpose of the Workers Compensation Act Division 10 Accident Reporting and Investigation, how it applies and where it can be accessed.</p> <p>1.4. Explain the purpose of the Forest and Range Practices Act and where it can be accessed.</p> <p>1.5. Explain the purpose of “Notice to Airmen” how it applies and where it can be accessed.</p>
2. Regulations	<p>2.1. Describe enforcement and WorkSafeBC responsibilities.</p> <p>2.2. Explain general regulations that apply to the forest industry including part 26.</p> <p>General Regulations must include:</p> <ul style="list-style-type: none"> • Definitions, general requirements, equipment operation, manual falling and bucking, mechanical falling, traffic control, yarding, skidding, forestry work areas, hauling, roads and road maintenance, water operations. <p>2.3. Explain how to access regulations and standards in the workplace environment.</p>

Summary of Knowledge and Skills



<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Workers Compensation Act Division 10 • Wildfire Act • Forest and Range Practice Act • Notice to Airmen • WorkSafeBC responsibilities and enforcement • General regulations related to Forestry • How to access regulations.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

General Forestry Assessment Guide

<p>General</p>	<p>Competence outcomes requiring “knowledge of” can be assessed</p>
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Information	<p>through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • A competency conversation is available for this unit. • This unit is required for Certificate of Qualification – Faller.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1039
Title	Describe Risk and Risk Control
Document	Unit of Competency

Description	<p>This is a knowledge only unit about:</p> <ul style="list-style-type: none"> • Hierarchy of Controls; and • Evaluating Risk.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry. • All Forestry occupations where applicable.
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Element	Competence Outcomes
1. Hierarchy of Controls	1.1. Describe the risk assessment process. 1.2. Explain the <i>hierarchy of controls</i> . <i>Hierarchy of controls</i> must include: <ul style="list-style-type: none"> • Elimination, substitution, engineering controls, administration controls, PPE. 1.3. Describe the levels of effectiveness for safety controls.
2. Evaluating Risk	2.1. Evaluate long term and general risk including frequency and probability. 2.2. Evaluate immediate risks including frequency and probability. 2.3. Evaluate how change or unexpected events affect risk levels.

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	For this unit, a competent worker must understand: <ul style="list-style-type: none"> • Risk assessment • Hierarchy of controls • Levels of effectiveness for safety controls • Evaluating long term and general risks • Evaluating immediate risk • How change or unexpected events affect risk levels.
Summary of Skills to be Assessed	For this unit a competent worker must be able to: <ul style="list-style-type: none"> • This is a knowledge only unit.



General Forestry Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence should be on record showing the outcomes have been met.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • A competency conversation is available for this unit. • A standardized hazard identification form has been developed to support this unit. • This unit is required for Certificate of Qualification – Faller.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>

Unit	1077
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Title	Describe Job Control and Engineering Basics
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Engineering Terminology; • Common Instruments; • Slope and Grade; and • Common Utilities.
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Regulatory Requirements	It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All Road Building Equipment.
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Element of Competence	Competence Outcomes
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Element of Competence	Competence Outcomes
1. Terminology	1.1. Describe terminology related to engineering concepts. Terminology must include: <ul style="list-style-type: none"> • Road layout, maps, profiles and cross sections, centre line, offsets, riparian zones, adverse, grade, pits, rock cuts, subgrade, ballasting, puncheon, end haul, resource prescriptions, spoil sites.
2. Common Instruments	2.1. Identify common instruments used in road building . Common instruments used in road building must include: <ul style="list-style-type: none"> • Levels, rotary laser, pipe laser, tripods, rods, electronic measurement systems, chain, nylon and metal tapes, clinometers, compass, GPS, lidar.
3. Slope and Grade	3.1. Identify slope. 3.2. Describe expression of slope. 3.3. Explain how to control the creation of slope. 3.4. Explain construction-initiated slide and prevention measures.
4. Common Utilities	4.1. Explain common utilities and their location. Common utilities must include: <ul style="list-style-type: none"> • Water, sanitary, storm, hydro/phone, gas. 4.2. Describe techniques used to expose existing utilities.

Summary of Knowledge and Skills



<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Terminology related to engineering concepts • Common instruments used in road building • Expressions of slope • Identify slope • Control the creation of slope • Construction initiated slide and prevention measures • Common utilities • Techniques used to expose utilities.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.



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<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Competency conversations are available for this unit.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1078
Title	Describe Soils and Aggregates
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Soils; • Rock Types; • Aggregates; and • Compaction.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All Road Building Equipment.
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Element of Competence	Competence Outcomes
1. Soils	<p>1.1. Identify soil types.</p> <p>Soil types must include:</p> <ul style="list-style-type: none"> • Cohesive (hard panned clay), granular, organic. <p>1.2. Describe suitability of soil types for construction.</p> <p>1.3. Describe soil characteristics.</p> <p>Soil characteristics must include:</p> <ul style="list-style-type: none"> • Load bearing, density, adhesion, shearing resistance, permeability, plasticity (water retention), elasticity, gradation. <p>1.4. Explain soil classifications.</p> <p>Soil classifications must include:</p> <ul style="list-style-type: none"> • Texture, structure, consistency, color. <p>1.5. Describe methods to minimize erosion.</p> <p>1.6. Describe sediment control techniques.</p>
2. Aggregates	<p>2.1. Identify rippable and non-rippable rocks.</p> <p>Rippable rocks may include:</p> <ul style="list-style-type: none"> • Shale, rotten, conglomerate <p>Non rippable rocks may include:</p> <ul style="list-style-type: none"> • Granite, limestone, basalt. <p>2.2. Describe the characteristics of aggregates.</p> <p>2.3. Describe aggregate processing.</p> <p>2.4. Explain common products and uses for aggregate.</p>
3. Compaction	<p>3.1. Describe compaction principles.</p> <p>3.2. Describe compaction equipment.</p> <p>3.3. Describe compaction testing.</p> <p>3.4. Describe compacting levels.</p>



Summary of Knowledge and Skills

<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Soil types • Rock types • Suitability of soil types for construction • Soil characteristics • Soil classifications • Methods to minimize erosion • Sediment control techniques • Aggregate processing • Characteristics of aggregates • Common products and use for aggregates • Compaction principles • Compaction equipment • Compaction principles • Compaction levels.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Road Building Assessment Guide

<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Competency conversations are available for this unit.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.



Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none">• Trainer• Assessor• Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>
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Unit	1079
Title	Describe Environmental Awareness, Protection and Enhancement
Document	Unit of Competency

Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Environmental Considerations; and • Spill control.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All Road Building Equipment.
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Element of Competence	Competence Outcomes
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Element of Competence	Competence Outcomes
1. Environmental	1.1. Describe legal, political, and public perception of environmental impact in Forestry including documentation. 1.2. Describe the impact on fish and wildlife. 1.3. Describe the impact of soil erosion and sedimentation on watercourses and the environment 1.4. Describe the impact on water quality community watersheds.
2. Spill Control	2.1. Explain legal, environmental implications of a spill including documentation requirements. 2.2. Explain the types and potential sources of spills. 2.3. Describe measures used to reduce risk of petroleum spills. 2.4. Describe spill control techniques.

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	For this unit, a competent worker must understand: <ul style="list-style-type: none"> • Legal, political, and public perception of environment • Road building impact on fish and wildlife • Impact of road building on environment • Impact of road building on community water supplies • Legal implications of a spill • Types and potential sources of spills • Measures used to reduce potential petroleum spills • Spill control techniques.
Summary of Skills to be Assessed	For this unit a competent worker must be able to: <ul style="list-style-type: none"> • This is a knowledge only unit.

Road Building Assessment Guide



<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Competency conversations are available for this unit.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1080
Title	Recognize, Evaluate and Control Hazards related to Road Building
Document	Unit of Competency

Description	<p>This unit is about:</p> <ul style="list-style-type: none"> Recognize, Evaluate, and Control Hazards related to Road Building.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> 1002 – Describe Forest Industry
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> All yarding occupations. All mechanized harvesting occupations.
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Element of Competence	Competence Outcomes
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Element of Competence	Competence Outcomes
1. Recognize, Evaluate, and Control Hazards	1.1. Identify and demonstrate ability to recognize, evaluate and control overhead hazards. 1.2. Identify and demonstrate ability to recognize, evaluate and control ground hazards. 1.3. Identify and demonstrate ability to recognize, evaluate and control tree and log hazards. 1.4. Identify and demonstrate ability to recognize, evaluate and control poor planning hazards. 1.5. Identify and demonstrate ability to recognize, evaluate and control phase congestion hazards.

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	For this unit, a competent worker must understand: <ul style="list-style-type: none"> • Overhead hazards • Ground hazards • Tree and log hazards • Poor planning hazards • Phase congestion hazards.
Summary of Skills to be Assessed	For this unit a competent worker must be able to: <ul style="list-style-type: none"> • This is a knowledge only unit.



General Forestry Assessment Guide

<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Competency conversations are available for this unit.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1081
Title	Describe Tools and Equipment for Heavy Machinery
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Mechanic Tools; • Welding Equipment and Supplies; • Gas Powered Tools; and • Lubricants.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All Road Building Equipment • All Mechanized Harvesting Equipment.
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Element of Competence	Competence Outcomes
1. Mechanic Tools	<p>1.1. Identify common and specialty tools used on heavy equipment.</p> <p>Common and Specialty tools used on heavy equipment may include:</p> <ul style="list-style-type: none"> • Multi testers, inspection mirrors, pick up magnets, “easy outs”, wrenches, taps and dies, hammers, shovels, drift and pry bars, chisel, files, jack, air tools, impact wrench, ratchets, die grinder, greaser, hose press.
2. Welding Equipment and Supplies	<p>2.1. Identify welding equipment and supplies used on heavy equipment.</p> <p>Welding equipment and supplies used on heavy equipment may include</p> <ul style="list-style-type: none"> • Oxy acetylene cutting systems, Propane gas torch ‘tiger torch’, chip hammers, wire brush, chalk, tip cleaner, grinder, drill, cut off saw, air tools, flux chippers, grinders, vice, cutting table, plasma cutter, air arc. <p>2.2. Describe types of welding used on heavy equipment.</p> <p>Types of welding may include:</p> <ul style="list-style-type: none"> • Stick welding, wire feed, brazing. <p>2.3. Describe PPE required when using welding equipment.</p> <p>PPE required when using welding equipment Must include</p> <ul style="list-style-type: none"> • Gloves, welding helmet, cutting goggles.
3. Gas Powered Tools	<p>3.1. Describe gas-powered tools used on heavy equipment.</p> <p>Gas-powered tools used on heavy equipment may include:</p> <ul style="list-style-type: none"> • 2 stroke vs. 4 stroke – mixed gas vs. straight gas • Cut off saw, chainsaw, pressure washers, gas or electric compressors, gas or diesel generators, pumps, plate compactor.



Element of Competence	Competence Outcomes
4. Lubricants	<p>4.1. Describe <i>lubricants used on heavy equipment</i> and their application.</p> <p><i>Lubricants used on heavy equipment</i> may include:</p> <ul style="list-style-type: none"> • Grease, oils (engine, gear, hydraulic), specialty oils, viscosity, Safety Data Sheets (SDS).
5. Common Supplies	<p>5.1. Explain <i>common supplies used on heavy equipment</i>.</p> <p><i>Common supplies used on heavy equipment</i> may include:</p> <ul style="list-style-type: none"> • De-ice, methyl hydrate, starting fluid, antifreeze, brake cleaner • Duct tape, insulating tape, 'hay' wire, cable ties, tie downs • Fasteners, nuts and bolts, washers, screws, rivets, pins hose clamps • O-rings, seals, grease nipples, pipefittings, grommets, hydraulic hoses • Bucket teeth, pins, locks, corner bits, cutting edges.

Summary of Knowledge and Skills



Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Common and specialty tools • Welding equipment and supplies • Gas powered tools • Lubricants • Common supplies.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Road Building and Mechanized Harvesting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Competency conversations are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1082
Title	Describe General Heavy Equipment Inspection and Maintenance Procedures
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Major Mechanical Components and Problems; and • Pre-start, Shut Down and Maintenance;
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All Road Building Equipment • All Mechanized Harvesting Equipment.
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Element of Competence	Competence Outcomes
<p>1. Major Mechanical Components and Problems</p>	<p>1.1. Describe major mechanical components requiring maintenance and inspection.</p> <p>Major mechanical components may include:</p> <ul style="list-style-type: none"> • Engines, hydraulic systems, electrical systems, attachments, undercarriage. <p>1.2. Describe potential failures, symptoms and indicators of failure.</p> <p>Potential failures, symptoms and indicators of failure may include:</p> <ul style="list-style-type: none"> • Noise, vibration, smells, leaks, cracks, lack of power, improper function, exhaust colour, gauges, warning lights.
<p>2. Pre- Start, Shut Down and Maintenance</p>	<p>2.1. Describe pre-start procedures.</p> <p>Pre-start procedures must include:</p> <ul style="list-style-type: none"> • Accessing checkpoint, OEM requirements, visual checks, fluid checks, and operational checks. <p>2.2. Describe shut down procedures.</p> <p>Shut down procedures may include:</p> <ul style="list-style-type: none"> • OEM requirements, parking position, maintenance, attachments grounded. <p>2.3. Explain maintenance procedures.</p> <p>Maintenance procedures may include:</p> <ul style="list-style-type: none"> • Lockout or zero energy state, greasing, adding fluids and fuel, draining fuel sumps and water separators, tightening loose hardware, adjusting belt tension, repairing leaks, replacing O-rings, replacing hoses, replacing filters, bleeding air from fuel systems, adjusting track tension, maintaining tire pressure, clean and maintain batteries.



Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Major mechanical components requiring maintenance and inspection • Potential failures, symptoms and indicators of failure • Pre-start procedures • Shut down procedures • Maintenance procedures.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Road Building and Mechanized Harvesting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Competency conversations are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>

Unit	1083
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Title	Describe Heavy Equipment Mechanical Systems
Document	Unit of Competency

Description	<p>This is a knowledge unit about:</p> <ul style="list-style-type: none"> • Engines; • Hydraulic Systems; • Powertrain Systems; • Track Systems; • Braking Systems; • Electrical Systems; and • Ground Engaging Tools Systems.
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Regulatory Requirements	It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • All Road Building Equipment • All Mechanized Harvesting Equipment.
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Element of Competence	Competence Outcomes
1. Engines	1.1. Explain basic engine theory including parts and functions.



Element of Competence	Competence Outcomes
	1.2. Explain lubrication theory systems and functions. 1.3. Explain cooling systems and functions. 1.4. Explain fuel systems and functions. 1.5. Explain air induction and exhaust systems and functions.
2. Hydraulic Systems	2.1. Describe hydraulic theory including basic parts . Basic parts must include: <ul style="list-style-type: none"> • Pumps, motor, cylinders, hoses, rotary manifolds • Tank and fluid level indicator.
3. Powertrain Systems	3.1. Describe drive systems theory including basic parts and function. Basic parts must include: <ul style="list-style-type: none"> • Travel motors, transmissions, differentials, final drives, engine, pumps.
4. Track Systems	4.1. Describe tracked systems theory including basic parts and function. Basic parts must include: <ul style="list-style-type: none"> • Pads, chains (rails), idler, sprocket, bottom and top (carrier) rollers, track adjuster.
5. Braking Systems	5.1. Explain systems theory including basic parts and function. Basic parts and function must include: <ul style="list-style-type: none"> • Air, hydraulic, spring, park brake, air/hydraulic, engine-braking systems (compression, exhaust), hydrostatic, brake controls, retarder (transmission brake)
6. Electrical Systems	6.1. Explain electrical systems theory including basic parts and function.



Element of Competence	Competence Outcomes
	<p>Basic parts must include:</p> <ul style="list-style-type: none"> • 12V and 24V systems, alternators, starters, batteries, fuses and solenoids, switches, wiring • Other systems – lights, heater motors, auxiliary equipment.
7. Ground Engaging Tool Systems	<p>7.1. Explain ground engaging tools, systems and functions.</p> <p>Systems must include:</p> <ul style="list-style-type: none"> • Blades, buckets, Scarifiers, grapples, rock hammers, compactors, drill hammers.

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	For this unit, a competent worker must understand:
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	<ul style="list-style-type: none"> • Basic engine and lubrication theory • Cooling systems • Fuel systems • Air induction and exhaust systems • Tier 4 final exhaust systems • Hydraulic theory • Drive system theory • Track Systems • Braking systems • Electrical systems • Ground engaging tools and systems.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Road Building and Mechanized Harvesting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training modules are available for this unit. • Competency conversations are available for this unit.
Evidence to be Assessed	<ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



Unit	1142
Title	Describe and Operate Dozer
Document	Unit of Competency

Description	<p>This is a knowledge and ability unit about:</p> <ul style="list-style-type: none"> • Pre Work Activities Related to Operating Dozers; • Operating Dozers; and • Completing Tasks Post Operations.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • All occupational skills units related to Road Building.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Dozer Operator.
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Element of Competence	Competence Outcomes
1. Pre-Work Activities	<p>1.1. Demonstrate ability to use equipment manuals and specifications to determine safe operating procedures and operational restrictions of Dozers.</p> <p>1.2. Identify hazards related to operating Dozers and means to control them.</p> <p>1.3. Demonstrate ability to perform pre-start equipment checks.</p> <p>Pre-start equipment checks must include:</p> <ul style="list-style-type: none"> • Walk around to check for leaks, loose components, track pads cracks, loose/ missing bolts, damage to machine, obstructions • Hazards related to pre-start, fluids, 2-sided dipsticks, visual and operational checks, turn on night switch. <p>1.4. Demonstrate ability to perform start up procedures.</p> <p>Startup procedures must include:</p> <ul style="list-style-type: none"> • Getting into machine (maintain 3 – point contact) • Find key, gauges, warning systems, start and warm up hydraulics, transmission, lights, wipers, seat belt, lock outs, parking brake, all controls and major systems.
2. Operate Dozer	<p>2.1. Demonstrate ability to operate a Dozer.</p> <p>Dozer must include:</p> <ul style="list-style-type: none"> • Raise, lower, and tilt blade, move forward, back up stop, lower blade, apply park brake, lockout transmission • Multiple functions at same time. <p>2.2. Demonstrate ability to strip and stockpile surface materials.</p> <p>Strip and stockpile surface materials must include:</p> <ul style="list-style-type: none"> • Strip waste materials, stockpile waste materials. <p>2.3. Demonstrate ability to cut and fill material.</p> <p>Cut and fill material must include:</p> <ul style="list-style-type: none"> • Plan task, cut ‘highs’, push to ‘lows’, grade area. <p>2.4. Demonstrate ability to create slopes.</p>



Element of Competence	Competence Outcomes
	<p>Create slopes must include:</p> <ul style="list-style-type: none"> Plan the task, cut and grade slope. <p>2.5. Demonstrate ability to Create ditches.</p> <p>Create ditches must include:</p> <ul style="list-style-type: none"> Create ditches, stockpile or level spoil. <p>2.6. Demonstrate ability to spread ballast.</p> <p>Spread ballast must include:</p> <ul style="list-style-type: none"> Direct trucks, spread and grade ballast. <p>2.7. Demonstrate ability to clear land.</p> <p>Clear land must include:</p> <ul style="list-style-type: none"> Clearing, grubbing, burning. <p>2.8. Demonstrate ability to place aggregates to specified elevations.</p> <p>2.9. Demonstrate ability to rip dense materials.</p> <p>Rip dense materials must include:</p> <ul style="list-style-type: none"> Rip, cut and push. <p>2.10. Demonstrate ability to monitor performance of equipment during operation.</p>
3. Complete Tasks	<p>3.1. Demonstrate ability to perform shut down procedures</p> <p>Shut down procedures must include:</p> <ul style="list-style-type: none"> Safe parking position, brake, lower blade/attachments, position for ease of access, level position for fluid checks, cool down before shut down, walk around and general check, secure machine, locks, three-point contact coming out of machine, turn off night switch <p>3.2. Demonstrate ability to perform daily maintenance tasks</p> <p>Daily maintenance tasks must include:</p> <ul style="list-style-type: none"> Lubrication systems, air intake systems, air system reservoir, fuel tank sump, water separator, fuel filters, inspect and clean components, housekeeping, track tension, air tire pressure, greasing and fueling



Element of Competence	Competence Outcomes
	<p>3.3. Demonstrate ability to complete basic repairs and maintenance on a Dozer</p> <p>Basic repairs must include:</p> <ul style="list-style-type: none"> • Hydraulic hoses, fuel filter, engine oil change, lube filter, adjust belt tension, battery terminals, fluids.

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Hazards related to operating a Dozer and the means to control
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	<p>them</p> <ul style="list-style-type: none"> • How to use equipment manuals including safe operating procedures and Dozer limitations • Basic repairs required on a Dozer
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Conduct pre-start equipment checks • Conduct pre – start up procedures • Perform basic tasks on a Dozer • Strip and stockpile materials • Cut and fill material • Create slopes • Create ditches • Spread ballast • Clear land • Rip dense material • Push scraper to assist loading • Monitor performance of equipment • Perform shut down procedures • Perform daily maintenance tasks • Perform basic repairs on a dozer



Road Building Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none">• Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none">• Competency conversation is available for this unit.• Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none">• Trainer• Assessor• Supervisor.



Unit	1085
Title	Describe and Operate Excavator
Document	Unit of Competency

Description	<p>This is a knowledge and ability about:</p> <ul style="list-style-type: none"> • Pre Work Activities related to Operating Excavators; • Operating Excavators; • Completing Tasks Post Operations; and • Excavator Attachments.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • All occupational skills units related to Road Building Equipment.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Excavator Operator.
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Element of Competence	Competence Outcomes
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Element of Competence	Competence Outcomes
1. Pre-Work Activities	<p>1.1. Describe and demonstrate ability to use equipment manuals and specifications to determine safe operating procedures and operational restrictions of Excavators.</p> <p>1.2. Identify hazards related to operating Excavators and means to control them.</p> <p>1.3. Demonstrate ability to perform pre-start equipment checks.</p> <p>Pre-start equipment checks must include:</p> <ul style="list-style-type: none"> • Walk around to check for leaks, loose components, track pad, cracks, loose/ missing bolts, damage to machine, obstructions • Hazards related to pre-start, fluids, 2-sided dipsticks, visual and operational checks, turn on night switch. <p>1.4. Demonstrate ability to perform start up procedures.</p> <p>Start up procedures must include:</p> <ul style="list-style-type: none"> • Getting into machine (maintain 3 – point contact) • Find key, gauges, warning systems, start and warm up hydraulics, transmission, lights, wipers, seat belt, lock outs, parking brake, all controls and major systems. • Check emergency route/device.
2. Operate Excavator	<p>2.1. Demonstrate ability to perform operator functions on a Excavator.</p> <p>Operator functions on an Excavator must include:</p> <ul style="list-style-type: none"> • Placement of machine for ease of access and egress • Engage hydraulics • Aware of surroundings • Operating with attachments away from machine to prevent damage.



Element of Competence	Competence Outcomes
	<p>2.2. Demonstrate ability to operate excavator <i>smoothly</i>.</p> <p><i>Smoothly</i> must include:</p> <ul style="list-style-type: none"> • Raise and lower boom, • Extend and retract stick, • Curl and dump bucket, swing left and right • Move forward, stop, back up, stop • Basic skid turns in both directions • Use multiple functions at once. <p>2.3. Demonstrate ability to <i>excavate and backfill trenches</i>.</p> <p><i>Excavate and backfill trenches</i> must include:</p> <ul style="list-style-type: none"> • Shallow trench, deep trench, backfill, install culverts and deadman anchors. <p>2.4. Demonstrate ability to <i>cut and place material</i>.</p> <p><i>Cut and place material</i> must include:</p> <ul style="list-style-type: none"> • Plan the task, cut 'highs', fill the 'lows' and maintain grade, grade area. • Cuts are scaled to minimize overhang and loose rock. <p>2.5. Demonstrate ability to <i>strip and stockpile surface materials/organics</i>.</p> <p><i>Strip and stockpile surface materials/organics</i> must include:</p> <ul style="list-style-type: none"> • Strip waste materials, hoe chuck to stockpile, stockpile. <p>2.6. Demonstrate ability to <i>create mass excavations</i>.</p> <p><i>Create mass excavations</i> must include:</p> <ul style="list-style-type: none"> • Plan the job, create excavation. <p>2.7. Demonstrate ability to <i>load trucks</i>.</p> <p><i>Load trucks</i> must include:</p> <ul style="list-style-type: none"> • Arrange loading site, maintain pit floor level, smooth, clear of rocks, load smoothly, communication, borrow pit below road grade



Element of Competence	Competence Outcomes
	<p>guarded when not active.</p> <p>2.8. Demonstrate ability to create side cast without creating slope failure (road building on sloping terrain).</p> <p>2.9. Demonstrate ability to service utility crew. Service utility crew must include:</p> <ul style="list-style-type: none"> • Excavate trenches, place material, place backfill, install and use hoe pack, hoist object, clean up and grading, expose underground services. <p>2.10. Demonstrate ability to conduct optional activities. Optional activities may include:</p> <ul style="list-style-type: none"> • Place rip rap, clear land, demolition tasks. <p>2.11. Demonstrate ability to determine pit face stability.</p> <p>2.12. Demonstrate ability to monitor performance of equipment during operation.</p>
<p>3. Complete Tasks</p>	<p>3.1. Demonstrate ability to perform shut down procedures. Shut down procedures must include:</p> <ul style="list-style-type: none"> • Safe parking position, brake, lower bucket/attachments, position for ease of access and egress, level position for fluid checks, cool down before shut down, walk around and general check, secure machine, locks, three-point contact coming out of machine, turn off night switch. <p>3.2. Demonstrate ability to perform daily maintenance tasks. Daily maintenance tasks must include:</p> <ul style="list-style-type: none"> • Lubrication systems, air intake systems, air system reservoir, fuel tank sump, water separator, fuel filters, inspect and clean components, housekeeping, track tension, air tire pressure, greasing and fueling. <p>3.3. Demonstrate ability to describe basic repairs and maintenance on an Excavator. Basic repairs must include:</p> <ul style="list-style-type: none"> • Hydraulic hoses, fuel filter, engine oil change, lube



Element of Competence	Competence Outcomes
	filter, adjust belt tension, battery terminals, fluids.
4. Attachments	<p>4.1. Demonstrate ability to install attachments for Excavators.</p> <p>4.2. Demonstrate ability to use attachments for Excavators.</p> <p>Attachments may include:</p> <ul style="list-style-type: none"> • Hoe pack, rock breaker, mulchers, heel rack and grapple, ripper, bucket, thumb, tongs. <p>4.3. Demonstrate ability to maintain attachments for Excavators.</p>



Summary of Skills and Knowledge

<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Hazards related to operating a Excavator and the means to control them • How to use equipment manuals including safe operating procedures and Excavator limitations • Basic maintenance and repairs required on an Excavator.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Conduct pre-start equipment checks • Conduct pre – start up procedures • Perform basic tasks on a Excavator • Strip and stockpile materials • Cut and place material • Backfill trenches and excavations • Create mass excavations • Service utility crews • Conduct optional activities as required • Load trucks • Monitor equipment during operations • Conduct shut down procedures • Perform daily maintenance • Determine pit face stability • Install, use and maintain attachments.



Road Building Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none">• Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none">• Competency conversation is available for this unit.• Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none">• Trainer• Assessor• Supervisor.



Unit	1086
Title	Describe and Operate Backhoe
Document	Unit of Competency

Description	<p>This is a knowledge and ability unit about:</p> <ul style="list-style-type: none"> • Pre Work Activities related to Operating a Backhoe; • Operating Backhoe; • Completing Tasks Post Operations; and • Backhoe attachments.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • All occupational skills units related to Road Building Equipment.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Backhoe Operator.
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Element of Competence	Competence Outcomes
1. Pre-Work Activities	<p>1.1. Demonstrate ability to use equipment manuals and specifications to determine safe operating procedures and operational restrictions of a Backhoe.</p> <p>1.2. Identify hazards related to operating Backhoes and means to control them.</p> <p>1.3. Demonstrate ability to perform pre-start equipment checks.</p> <p>Pre-start equipment checks must include:</p> <ul style="list-style-type: none"> • Walk around to check for leaks, loose components, cracks, loose/ missing bolts, damage to machine, obstructions • Hazards related to pre-start, fluids, 2 sided dipsticks, visual and operational checks, turn on night switch • Wheels, wheel nuts, tires – inspections and pressure. <p>1.4. Demonstrate ability to perform start up procedures.</p> <p>Start up procedures must include:</p> <ul style="list-style-type: none"> • Getting into machine (maintain 3 – point contact) • Find key, gauges, warning systems, start and warm up hydraulics, transmission, lights, wipers, seat belt, lock outs, parking brake, all controls and major systems.
2. Operate Backhoe	<p>2.1. Demonstrate ability to operate a Backhoe.</p> <p>Backhoe must include:</p> <ul style="list-style-type: none"> • Raise and lower, curl and dump, move forward, stop, back up, stop, lower bucket, apply brake, lockout transmission, raise and lower Backhoe boom, extend and retract stick, position stabilizers, swing left and right, lock out • Multi functions at same time.



Element of Competence	Competence Outcomes
	<p>2.2. Demonstrate ability to <i>dig, carry (tram), and stockpile materials.</i></p> <p><i>Dig, carry (tram), and stockpile materials</i> must include:</p> <ul style="list-style-type: none"> • Fill, carry, place material • Create ramp. <p>2.3. Demonstrate ability to <i>place, spread and grade material in lifts.</i></p> <p><i>Place, spread and grade material in lifts</i> must include:</p> <ul style="list-style-type: none"> • Fill, carry, place material in stockpile. <p>2.4. Demonstrate ability to <i>excavate trenches and ditches.</i></p> <p><i>Excavate trenches and ditches</i> must include:</p> <ul style="list-style-type: none"> • Excavate shallow and deep trenches, backfill • Place bedding or drain rock, place material, grade work to slope • Make stable trenches (shored/ sloping requirements). <p>2.5. Demonstrate ability to <i>service utility crews.</i></p> <p><i>Service utility crews</i> must include:</p> <ul style="list-style-type: none"> • Place bedding or drain rock, place backfill material, hoist and carry objects, grade clean-up work area • Excavate service trenches, expose existing underground services, clean up debris. <p>2.6. Demonstrate ability to <i>load trucks.</i></p> <p><i>Load trucks</i> must include:</p> <ul style="list-style-type: none"> • Arrange loading site, maintain pit floor level, smooth, clear of rocks, load smoothly, communication. <p>2.7. Demonstrate ability to monitor performance of equipment during operation.</p>



Element of Competence	Competence Outcomes
3. Complete Tasks	<p>3.1. Demonstrate ability to perform shut down procedures.</p> <p>Shut down procedures must include:</p> <ul style="list-style-type: none"> • Safe parking position, brake, lower bucket/attachments, position for ease of access, level position for fluid checks, cool down before shut down, walk around and general check, secure machine, locks. <p>3.2. Demonstrate ability to perform daily maintenance tasks.</p> <p>Daily maintenance tasks must include:</p> <ul style="list-style-type: none"> • Lubrication systems, air intake systems, air system reservoir, fuel tank sump, water separator, fuel filters, inspect and clean components, housekeeping. <p>3.3. Demonstrate ability to describe basic repairs and maintenance on a Backhoe.</p> <p>Basic repairs must include:</p> <ul style="list-style-type: none"> • Hydraulic hoses, fuel filter, engine oil change, lube filter, adjust belt tension, air tire pressure, battery terminals, fluids, bucket teeth.
4. Attachments	<p>4.1. Demonstrate ability to install attachments for a Backhoe.</p> <p>4.2. Demonstrate ability to use attachments for a Backhoe.</p> <p>Attachments may include:</p> <ul style="list-style-type: none"> • 4-in-one bucket, regular bucket, hoe pack, rock breaker, hydraulic stick extension, brush cutter, front and rear buckets. <p>4.3. Demonstrate ability to maintain attachments for a Backhoe.</p>

Summary of Skills and Knowledge



<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Hazards related to operating a Backhoe and the means to control them • How to use equipment manuals including safe operating procedures and Backhoe limitations • Basic repairs required on a Backhoe.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Conduct pre-start equipment checks • Conduct pre – start up procedures • Perform basic tasks on a Backhoe • Dig, carry, and stockpile materials • Place, spread, grade materials • Excavate trenches and ditches • Service utility crews • Load trucks • Monitor equipment during operations • Conduct shut down procedures • Perform daily maintenance • Install, use and maintain attachments.



Road Building Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none">• Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none">• Competency conversation is available for this unit.• Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none">• Trainer• Assessor• Supervisor.



Unit	1087
Title	Describe and Operate Grader
Document	Unit of Competency

Description	<p>This is a knowledge and ability unit about:</p> <ul style="list-style-type: none"> • Grading Fundamentals; • Pre Work Activities related to Operating Graders; • Operating Graders; • Completing Tasks Post Operations; and • Grader Attachments.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • All occupational skills units related to Road Building Equipment.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Grader Operator.
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Element of Competence	Competence Outcomes
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Element of Competence	Competence Outcomes
1. Pre-Work Activities	<p>1.1. Demonstrate ability to use equipment manuals and specifications to determine safe operating procedures and operational restrictions of Graders.</p> <p>1.2. Identify hazards related to operating Graders and means to control them.</p> <p>1.3. Demonstrate ability to perform pre-start equipment checks.</p> <p>Pre-start equipment checks must include:</p> <ul style="list-style-type: none"> • Walk around to check for leaks, loose components, cracks, loose/ missing bolts, damage to machine, obstructions • Hazards related to pre-start, fluids, 2 sided dipsticks, visual and operational checks, turn on night switch • Wheels, wheel nuts, tires – inspections and pressure • Close air reservoir. <p>1.4. Demonstrate ability to perform start up procedures.</p> <p>Start up procedures must include:</p> <ul style="list-style-type: none"> • Getting into machine (maintain 3 – point contact) • Find key, gauges, warning systems, start and warm up hydraulics, transmission, lights, wipers, seat belt, lock outs, parking brake, all controls and major systems, housekeeping.
2. Operate Grader	<p>2.1. Demonstrate ability to perform basic moves on a Grader</p> <p>Basic moves on a Grader must include:</p> <ul style="list-style-type: none"> • Each of function of blade movement, typical changes for multi pass grading, ditching, sloping positions, tight blading • Multi functions move forward, stop, back up, stop.



Element of Competence	Competence Outcomes
	<p>2.2. Demonstrate ability to form and handle windrows.</p> <p>Form and handle windrows must include:</p> <ul style="list-style-type: none"> • Gear and engine speed, blade position, cutting material to form a windrow, moving material over area, water management in windrows. <p>2.3. Demonstrate ability to strip surface material.</p> <p>2.4. Demonstrate ability to cut and fill material.</p> <p>Cut and fill material must include:</p> <ul style="list-style-type: none"> • Plan the task, cut 'highs', move material to 'lows', grade area, tips. <p>2.5. Demonstrate ability to maintain roads.</p> <p>Roads may include:</p> <ul style="list-style-type: none"> • Construction access roads, logging roads, public roads. <p>2.6. Demonstrate ability to create slopes.</p> <p>2.7. Demonstrate ability to create ditches.</p> <p>2.8. Demonstrate ability to construct shouldering.</p> <p>2.9. Demonstrate ability to form road base (sub-grade).</p> <p>2.10. Demonstrate ability to place aggregates to specified elevations.</p> <p>2.11. Demonstrate ability to monitor performance of equipment during operation.</p>
<p>3. Complete Tasks</p>	<p>3.1. Demonstrate ability to perform shut down procedures.</p> <p>Shut down procedures must include:</p> <ul style="list-style-type: none"> • Safe parking position, brake, lower bucket/attachments, position for ease of access and egress, level position for fluid checks, cool down before shut down, walk around and general check, secure machine, locks, three-point contact coming out of machine, turn off night switch, close air reservoirs access.



Element of Competence	Competence Outcomes
	<p>3.2. Demonstrate ability to perform daily maintenance tasks.</p> <p>Daily maintenance tasks must include:</p> <ul style="list-style-type: none"> • Lubrication systems, air intake systems, air system reservoir, fuel tank sump, water separator, fuel filters, inspect and clean components, housekeeping, air tire pressure, greasing and fueling. <p>3.3. Demonstrate ability to describe basic repairs and maintenance on a Grader.</p> <p>Basic repairs must include:</p> <ul style="list-style-type: none"> • Hydraulic hoses, fuel filter, engine oil change, lube filter, adjust belt tension, battery terminals, fluids.
4. Attachments	<p>4.1. Demonstrate ability to install attachments for Graders.</p> <p>4.2. Demonstrate ability to use attachments for Graders.</p> <p>Attachments may include:</p> <ul style="list-style-type: none"> • Brush cutters, rippers, Scarifiers, roller compactor, wobblers, front blade, snow wings. <p>4.3. Demonstrate ability to maintain attachments for Graders.</p>
5. Grading Fundamentals	<p>5.1. Define terms used in relation to a grader.</p> <p>5.2. Define terms used to describe the work.</p> <p>5.3. Explain purpose and demonstrate ability to apply mouldboard fundamentals.</p> <p>5.4. Demonstrate knowledge of and ability to apply wheel lean control.</p> <p>5.5. Explain purpose and demonstrate ability to apply frame articulation fundamentals.</p> <p>5.6. Demonstrate ability to choose gear and engine speed for task.</p> <p>5.7. Demonstrate ability put the wheel lock up in or out.</p>



Summary of Skills and Knowledge

<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Grading fundamentals • Terms related to graders and their work • Wheel lean control • Mouldboard fundamentals • Hazards related to operating a Grader and the means to control them • How to use equipment manuals including safe operating procedures and Grader limitations • Basic repairs required on a Grader.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Conduct pre-start equipment checks • Conduct pre-start up procedures • Perform basic tasks on a Grader • Form and handle windrows • Strip surface material • Cut and fill material • Maintain roads • Create slopes, ditches, shouldering, • Form road base • Place aggregates to specified elevations • Apply mouldboard fundamentals • Apply wheel lean control • Apply frame articulation fundamentals • Choose gear and engine speed for task • Monitor equipment during operations • Conduct shut down procedures • Perform daily maintenance • Install, use and maintain attachments.



Road Building Assessment Guide

<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

<p>Unit</p>	<p>1088</p>
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Title	Describe and Operate Wheeled Loader
Document	Unit of Competency

Description	<p>This is a knowledge and ability unit about:</p> <ul style="list-style-type: none"> • Pre Work Activities related to Operating Loaders; • Operating Loaders; • Completing Tasks Post Operations; and • Loader Attachments.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • All occupational skills related to Road Building Equipment.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Wheeled Loader Operator.
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Element of Competence	Competence Outcomes
1. Pre-Work Activities	1.1. Demonstrate ability to use equipment manuals and



Element of Competence	Competence Outcomes
	<p>specifications to determine safe operating procedures and operational restrictions of Loaders.</p> <p>1.2. Identify hazards related to operating Loaders and means to control them.</p> <p>1.3. Demonstrate ability to perform pre-start equipment checks.</p> <p>Pre-start equipment checks must include:</p> <ul style="list-style-type: none"> • Walk around to check for leaks, loose components, cracks, loose/ missing bolts, damage to machine, obstructions • Hazards related to pre-start, fluids, 2 sided dipsticks, visual and operational checks, turn on night switch • Wheels, wheel nuts, tires – inspections and pressure. <p>1.4. Demonstrate ability to perform start up procedures.</p> <p>Start up procedures must include:</p> <ul style="list-style-type: none"> • In machine (maintain 3 – point contact) • Find key, gauges, warning systems, start and warm up hydraulics, transmission, lights, wipers, seat belt, lock outs, parking brake, all controls and major systems.
2. Operate Loader	<p>2.1. Demonstrate ability to perform basic moves on a Loader.</p> <p>Basic moves on a Loader must include:</p> <ul style="list-style-type: none"> • Raise and lower, curl and dump, move forward, stop, back up, stop, lower bucket, apply brake, lockout transmission, drive on uneven ground, doesn't spin wheels, understanding capabilities • Multi functions at once. <p>2.2. Demonstrate ability to dig, carry (tram), and stockpile materials.</p>



Element of Competence	Competence Outcomes
	<p>Dig, carry (tram), and stockpile materials must include:</p> <ul style="list-style-type: none"> • Fill, carry, place material • Create ramp. <p>2.3. Demonstrate ability to place, spread and grade material in lifts.</p> <p>Place, spread and grade material in lifts must include:</p> <ul style="list-style-type: none"> • Fill, carry, place material in stockpile. <p>2.4. Demonstrate ability to backfill trenches and excavations.</p> <p>2.5. Demonstrate ability to load trucks.</p> <p>Load trucks must include:</p> <ul style="list-style-type: none"> • Arrange loading site, maintain pit floor level, smooth, clear of rocks, load smoothly, communication. <p>2.6. Demonstrate ability to determine pit face stability.</p> <p>2.7. Demonstrate ability to monitor performance of equipment during operation.</p>
<p>3. Complete Tasks</p>	<p>3.1. Demonstrate ability to perform shut down procedures.</p> <p>Shut down procedures must include:</p> <ul style="list-style-type: none"> • Safe parking position, brake, lower bucket/attachments, position for ease of access and egress, level position for fluid checks, cool down before shut down, walk around and general check, secure machine, locks. <p>3.2. Demonstrate ability to perform daily maintenance tasks.</p> <p>Daily maintenance tasks must include:</p> <ul style="list-style-type: none"> • Lubrication systems, air intake systems, air system reservoir, fuel tank sump, water separator, fuel filters, inspect and clean components, housekeeping. <p>3.3. Demonstrate ability to describe basic repairs and maintenance on a Loader.</p> <p>Basic repairs must include:</p>



Element of Competence	Competence Outcomes
	<ul style="list-style-type: none"> • Hydraulic hoses, fuel filter, engine oil change, lube filter, adjust belt tension, air tire pressure, battery terminals, fluids, bucket teeth.
4. Attachments	<p>4.1. Demonstrate ability to install attachments for Loaders.</p> <p>4.2. Demonstrate ability to use attachments for Loaders.</p> <p>Attachments may include:</p> <ul style="list-style-type: none"> • Log grapple, forks, digging and clean up buckets, <p>4.3. Demonstrate ability to maintain attachments for Loaders.</p>

Summary of Skills and Knowledge

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Hazards related to operating a loader and the means to control
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	<p>them</p> <ul style="list-style-type: none"> • How to use equipment manuals including safe operating procedures and loader limitations • Basic maintenance and repairs on a loader.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Conduct pre-start equipment checks • Conduct pre – start up procedures • Perform basic tasks on a Loader • Dig, carry, and stockpile materials • Place, spread, grade materials • Excavate trenches and ditches • Load trucks • Monitor equipment during operations • Conduct shut down procedures • Perform daily maintenance • Determine pit face stability • Install, use and maintain attachments.



Road Building Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none">• Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none">• Competency conversation is available for this unit.• Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none">• Trainer• Assessor• Supervisor.



Unit	1089
Title	Describe and Operate Rock Drill
Document	Unit of Competency

Description	<p>This is a knowledge and ability unit about:</p> <ul style="list-style-type: none"> • Drills; • Pre Work Activities; • Operating Drill; and • Completing Work Activities. • This unit does not include blasting.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • All occupational skills related to Road Building.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Rock Drill Operator.
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Element of Competence	Competence Outcomes
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Element of Competence	Competence Outcomes
1. Drills	<p>1.1. Identify types of drills used in road building.</p> <p>Types of drills must include:</p> <ul style="list-style-type: none"> • Pneumatic and hydraulic, excavator, rubber tires mounted, air track, tank and hydraulic crawler. <p>1.2. Explain powder magazine storage requirements.</p> <p>1.3. Explain explosive types and uses.</p>
2. Pre-Work Activities	<p>2.1. Demonstrate ability to use equipment manuals and specifications to determine safe operating procedures and operational restrictions of Rock Drills.</p> <p>2.2. Identify hazards related to operating Rock Drills and means to control them.</p> <p>2.3. Describe how to determine placement of drill holes depending on topography and geology.</p> <p>2.4. Demonstrate ability to perform pre-start equipment checks.</p> <p>Pre-start equipment checks must include:</p> <ul style="list-style-type: none"> • Walk around to check for leaks, loose components, cracks, loose/ missing bolts, damage to machine, obstructions • Hazards related to pre-start, fluids, 2 sided dipsticks, visual and operational checks, turn on night switch • Wheels, nuts, tires – inspections and pressure • Close air reservoir • Safety equipment. <p>2.5. Demonstrate ability to perform start up procedures.</p> <p>Start up procedures must include:</p> <ul style="list-style-type: none"> • Getting into machine (maintain 3 – point contact) • Find key, gauges, warning systems, start and warm up hydraulics, transmission, lights, wipers, seat belt, lock outs, parking brake, all controls and



Element of Competence	Competence Outcomes
	major systems, radio operational.
<p>3. Operate Drill</p>	<p>3.1. Demonstrate ability to operate drill.</p> <p>Operate drill must include:</p> <ul style="list-style-type: none"> • Constantly checking pressure, rotation pressure and speed • Smooth operation of boom • Multiple functions at same time • Tuned into sound of hammer • Change and add rods as required. <p>3.2. Demonstrate ability to be situational aware at all time.</p> <p>3.3. Demonstrate ability to recognize evaluate and control hazards related to operating equipment on rocks</p> <p>Hazards must include:</p> <ul style="list-style-type: none"> • Instability, traction (slide potential), dust control, steep faces, danger trees.
<p>4. Complete Tasks</p>	<p>4.1. Demonstrate ability to perform shut down procedures.</p> <p>Shut down procedures must include:</p> <ul style="list-style-type: none"> • Safe parking position, brake, lower attachments, position for ease of access and egress, level position for fluid checks, cool down before shut down, walk around and general check, secure machine, locks, three-point contact coming out of machine, turn off night switch, close air reservoirs. <p>4.2. Demonstrate ability to perform daily maintenance tasks.</p> <p>Daily maintenance tasks must include:</p> <ul style="list-style-type: none"> • Lubrication greasing, torquing, inspecting components- hoses, loose bolts, wires attachments like drill rods couplers, tracks, dust suppression, hydraulic and air leaks, sharpen and maintain bits. <p>4.3. Demonstrate ability to describe basic repairs and maintenance.</p>



Element of Competence	Competence Outcomes
	<p>Basic repairs must include:</p> <ul style="list-style-type: none"> • Hydraulic hoses, fuel filter, engine oil change, lube filter, adjust belt tension, battery terminals, fluids.

Summary of Skills and Knowledge

<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Drill types • Hazards related to operating rock drills including on rocks • How to control hazards • Placement of drill based on topography and geology
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Use equipment manuals • Pre-start equipment checks • Start up procedures • Operate drill • Maintain situational awareness • Shut down procedures • Daily maintenance • Basic repairs



Road Building Assessment Guide

<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

<p>Unit</p>	<p>1135</p>
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Title	Describe and Operate Articulated Rock Truck
Document	Unit of Competency

Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Prepare for Work Activity; • Operate Articulated Rock Truck (ART); and • Complete Tasks.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • All occupational skills related to Road Building Equipment.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Articulated Rock Truck Operator.
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Element of Competence	Competence Outcomes
1. Prepare for Work Activity	1.1. Explain purpose of articulated rock trucks and



Element of Competence	Competence Outcomes
	<p>demonstrate ability to identify baseline operational Capabilities, limitations and restrictions.</p> <p>1.2. Identify hazards and the means to control them related to operating an articulated rock truck.</p> <p>Hazards may include:</p> <ul style="list-style-type: none"> • General hazards – Brakes, transmission, articulation, dumping, reversing, runaway, topple over, cab torque, bank recovery, winter conditions • Weight hazards • Brake hazards - wheel, park. <p>1.3. Explain safe work procedures when operating an articulated rock truck.</p> <p>Safe work procedures must include:</p> <ul style="list-style-type: none"> • Use of brakes and retarders, articulating, dumping, dumping when articulated, reversing techniques, reversing around corners, reversing in the dump site. <p>1.4. Explain torque converter lock up.</p> <p>Torque converter lock up must include:</p> <ul style="list-style-type: none"> • Modes of operation, runaway situations, six-wheel drive, start from start, engaged, flat ground, lock up downhill. <p>1.5. Demonstrate ability to conduct a pre-trip inspection in accordance with manufacturers specifications.</p> <p>Pre-trip inspection must include:</p> <ul style="list-style-type: none"> • Daily, weekly • Start up, Engine compartment, tractor check, trailer check.
2. Operate ART	2.1. Demonstrate ability to recognize, evaluate and control hazards while driving.



Element of Competence	Competence Outcomes
	<p>2.2. Describe the operation of an articulated rock truck.</p> <p>Operation must include:</p> <ul style="list-style-type: none"> • Pros of articulation, steering system, brake systems, locked up, control coming down a hill, runaway. <p>2.3. Demonstrate ability to operate the articulated rock truck safely.</p> <p>2.4. Demonstrate ability to conduct inspections and monitor truck and trailer throughout workday.</p> <p>2.5. Demonstrate ability to drive in an ergonomically correct position to reduce MSI and fatigue.</p>
3. Complete Tasks	<p>3.1. Demonstrate ability to cool down articulated rock truck before shutting down.</p> <p>3.2. Demonstrate ability to conduct a post trip inspection according to manufacturer's specifications including reports when required.</p> <p>Post trip inspection must include:</p> <ul style="list-style-type: none"> • All fluid levels, leaks articulation area, structure, driveline and suspension components. <p>3.3. Demonstrate ability to conduct basic maintenance on an articulated rock truck.</p> <p>Basic maintenance must include:</p> <ul style="list-style-type: none"> • Check and fill fluids <p>Basic maintenance may include:</p> <ul style="list-style-type: none"> • Lights, broken fittings, greasing.

Summary of Skills and Knowledge



<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Baseline operational capabilities, limitations and restrictions • Hazards related to articulated rock trucks • Safe Work Procedures • Torque convertor lock up • Pre-trip inspections • Inspection and maintenance procedures.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Perform pre-trip inspections • R-E-C hazards while driving • Operate rock truck safely • Monitor operation while driving • Drive in an ergonomically correct fashion • Cool down truck • Perform post trip in inspection and maintenance.



Road Building Assessment Guide

<p>General Information</p>	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
<p>Evidence to be Assessed</p>	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
<p>Evidence Sign Off</p>	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

<p>Unit</p>	<p>1163</p>
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Title	Recognize Evaluate and Control Blasting Hazards
Document	Unit of Competency

Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Hazards Before Blast; • Hazards During Blast; and • Hazards After the Blast.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • No prerequisites.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Forestry Blaster – Road Building
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Element of Competence	Competence Outcomes
1. Hazards Before Blasting	1.1. Describe controls related to transportation of



Element of Competence	Competence Outcomes
	<p>explosives.</p> <p>Controls related to transport include:</p> <ul style="list-style-type: none"> • Signage, training, documentation, proper storage <p>1.2. Identify ground hazards in the blasting environment.</p> <p>Ground hazards may include:</p> <ul style="list-style-type: none"> • Seams, voids, presence of water, ground/rock stability, • Bench height, flat or sloped (quarry), high rock cuts. <p>1.3. Identify overhead hazards in the blasting environment.</p> <p>Overhead hazards may include:</p> <ul style="list-style-type: none"> • Powerlines, low flying aircraft, loose material above- boulders and logs, ladders and ropes tied off to access blast holes during the loading process, danger trees (undermined trees), <p>1.4. Identify environmental hazards in the blasting environment.</p> <p>Environmental hazards may include:</p> <ul style="list-style-type: none"> • Wind, lightning, heavy rains, extreme temperatures, current fire rating, avalanche
2. Hazards During Blasting	<p>2.1. Identify hazards during the blast.</p> <p>Hazards during the blast may include:</p> <ul style="list-style-type: none"> • Loose material above, flying debris, unfavourable rock characteristics, air overpressure (shockwave)
3. Hazards After Blasting	<p>3.1. Identify post blast hazards.</p> <p>Post blast hazards may include:</p> <ul style="list-style-type: none"> • Loose material above, overhanging trees, low side hazards to downstream operations, vapour and



Element of Competence	Competence Outcomes
	gases in the air, misfired explosives, muck pile (can be unstable),

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <p>Hazards, before, during, post blast and</p> <ul style="list-style-type: none"> • Overhead hazards in the blasting environment • Transportation hazards • Ground hazards • Environmental hazards
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Blasting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

Unit	1164
Title	Describe Blasting Terminology and Documentation



Document	Unit of Competency
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Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Terminology related to Blasting; and • Documentation related to Blasting.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • No prerequisites.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Forestry Blaster – Road Building
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Element of Competence	Competence Outcomes
1. Blasting Terminology	<p>1.1. Define critical terminology related to Blasting.</p> <p>Critical terminology must include:</p>



Element of Competence	Competence Outcomes
	<ul style="list-style-type: none"> • Burden, spacing, over burden, stemming, blast pattern, boot leg (socket), magazine, misfire, • TDG, WorkSafeBC, NRCan • Blasting area, Danger area, powder factor • Safety fuse, shock tube <p>Other terminology may include:</p> <ul style="list-style-type: none"> • See glossary of terms
2. Blasting Documentation	<p>2.1. Identify documentation related to Blasting.</p> <p>Documentation must include:</p> <ul style="list-style-type: none"> • Blasters handbook, ERP for explosive, TDG, Emergency Response Assistance Plan, Pre-inspection form, magazine inventory form, risk assessment form (field level hazard assessment), blasting log, • explosives safety and security plan – fire safety, key control plan, security screening, security plan

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Critical blasting terminology • Documentation related to blasting
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Blasting Assessment Guide

General Information	Competence outcomes requiring “ knowledge of ” can be assessed through competency conversations or written assessment. Evidence must
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	<p>be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

Unit	1165
Title	Describe Tools and Equipment for Blasting



Document	Unit of Competency
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Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Blasting Equipment; and • Safety Equipment.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • No prerequisites.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Forestry Blaster – Road Building
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Element of Competence	Competence Outcomes
1. Blasting Equipment	1.1. Describe the purpose and function of <i>tools and equipment</i> related to loading.



Element of Competence	Competence Outcomes
	<p>Tools and equipment must include:</p> <ul style="list-style-type: none"> • Dewatering pump or pole, ANFO loader, loading pole, weighted tape measure, knife for cutting explosives (non-sparking), powder punch, electrician tape, loading tool, ladder, paint, crimpers, lead-in line, shovel, stemming buckets, grinding wheel • Blasting machines - shock tube initiator, electric, remote firing system
2. Safety Equipment	<p>2.1. Identify Personal Protective Equipment (PPE) required for blasting in Forestry.</p> <p>PPE must include:</p> <ul style="list-style-type: none"> • Ear protection, safety boots, harness and rope, Hi-Vis, gloves, eye protection, hard hat, dust mask <p>2.2. Identify other safety equipment required for blasting in Forestry.</p> <p>Other safety equipment must include:</p> <ul style="list-style-type: none"> • Ear protection, safety boots, harness and rope, fire extinguishers, First Aid kit, gloves, horns, radios, aircraft radio, blast barrier or tape, blasting mat, safety whip, signage, dust control system

Summary of Knowledge and Skills

Summary of Knowledge to be	For this unit, a competent worker must understand:
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Assessed	<ul style="list-style-type: none"> • Tools and equipment requirements • Personal Protective Equipment used on the job • Other safety equipment used in blasting
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Blasting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

Unit	1166
Title	Describe Regulations and Standards related to Blasting



Document	Unit of Competency
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Description	<p>This unit is about regulations related to Blasting for:</p> <ul style="list-style-type: none"> • Storage; • Transportation; • Use; and • Tickets/Licence
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • No prerequisites.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Forestry Blaster – Road Building
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Element of Competence	Competence Outcomes
1. Storage	<p>1.1. Explain regulation <i>related to storage</i> of explosives.</p> <p><i>Related to storage</i> must include:</p>



Element of Competence	Competence Outcomes
	<ul style="list-style-type: none"> • Natural Resources Canada, WorkSafeBC, Ministry of Mines
2. Transportation	2.1. Explain regulation <i>related to Transportation.</i> <i>Related to transportation</i> must include: <ul style="list-style-type: none"> • Transport Canada, WorkSafeBC
3. Use	3.1. Explain a blaster's <i>legal responsibilities.</i> <i>Legal responsibilities</i> must include: <ul style="list-style-type: none"> • Criminal code 79-82 3.2. Explain regulation related to <i>use of explosives.</i> <i>Use of explosives</i> must include: <ul style="list-style-type: none"> • WorkSafeBC – Part 21
4. Tickets/License/Checks	4.1. Identify <i>licenses'/certificates/checks</i> required for blasting. <i>Licenses/certificates/checks</i> must include: <ul style="list-style-type: none"> • Magazine licensing, blasting certificate, TDG certificate • Criminal background check - Possession and Acquisition License (PAL), NEXUS card, FAST, Permits – general, ERD approval letter

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	For this unit, a competent worker must understand: <ul style="list-style-type: none"> • Storage of explosives
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	<ul style="list-style-type: none"> • Transportation requirements • Legal responsibilities • Regulations related to the use of explosives • Licenses/certificates/checks required for blasting.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Blasting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

Unit	1167
Title	Describe Explosives for Blasting
Document	Unit of Competency



Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Explosives; and • Initiation Process.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • No prerequisites.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Blaster – Road Building Forestry
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Element of Competence	Competence Outcomes
1. Explosives	<p>1.1. Describe types of explosives.</p> <p>Explosives must include:</p> <ul style="list-style-type: none"> • Primary - Detonators • Secondary – Primers, stick powder, detonator



Element of Competence	Competence Outcomes
	sensitive <ul style="list-style-type: none"> • Tertiary – ANFO, non-detonator sensitive emulsion
2. Initiation Systems	2.1. Describe initiation systems . Initiation systems must include: <ul style="list-style-type: none"> • Shock tube primary, safety fuse, remote firing system, delays 2.2. Describe blasting machines . Blasting machines must include: <ul style="list-style-type: none"> • Blasting machines, hand held, electric, battery powered, mushroom, pen (shooters)

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	For this unit, a competent worker must understand: <ul style="list-style-type: none"> • Types of explosives • Types of initiation systems
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	<ul style="list-style-type: none"> • Types of Blasting machines
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • This is a knowledge only unit.

Blasting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

Unit	1168
Title	Prepare for Blasting Activity



Document	Unit of Competency
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Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Site Preparation; and • Develop Blasting Plan.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1163 – Recognize, Evaluate and Control Blasting Hazards • 1164 – Describe Terminology and Documentation • 1165 – Describe Tools and Equipment for Blasting • 1166 - Describe Regulations and Standards relate to Blasting • 1167 – Describe Explosives for Blasting • 1089 – Describe and Operate Rock Drill • Road Building Occupational Skills Units as Required
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Forestry Blaster – Road Building.
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Element of Competence	Competence Outcomes
1. Preparation	<p>1.1. Explain <i>magazine security system</i>.</p> <p><i>Security system</i> may include:</p>



Element of Competence	Competence Outcomes
	<ul style="list-style-type: none"> • Arm and disarm procedure • Motion camera/geo tagged • Physical check • Location dependent (remote location no system) <p>1.2. Explain purpose and demonstrate ability to secure explosives for transport.</p> <p>Secure explosives for transport must include:</p> <ul style="list-style-type: none"> • As required by the TDG Act, WorkSafeBC • Detonators and explosive must be in separate containers –separated by 6 inches or barrier in container. Box has to be non-flammable, non-sparking, locked, fixed to the vehicle • Placards on vehicle <p>1.3. Demonstrate ability to use documentation before leaving storage site.</p> <p>Use documentation must include:</p> <ul style="list-style-type: none"> • Pre-trip inspection of blasting vehicle, TDG ticket on person, sign-out magazine inventory sheet, TDG form in truck, criminal back ground check
2. Develop Blasting Plan	<p>2.1. Explain purpose and demonstrate ability to develop and adjust and document a blasting plan.</p> <p>Blasting plan must include:</p> <ul style="list-style-type: none"> • Type of rock, water in holes, drill bit size, fracture or competent, • Burden and spacing for desired fragmentation and fly rock control • Estimate how much explosives are required • Type of explosives • Timing and delay



Element of Competence	Competence Outcomes
	<ul style="list-style-type: none"> • Objective of blast <p>2.2. Describe how to develop a plan <i>in line with regulation</i>.</p> <p><i>In line with regulation</i> must include:</p> <ul style="list-style-type: none"> • Procedures for identifying and addressing potential misfires, • Include any exposure controls required by regulation (dust suppression, gloves, eye protection) • Identify any work activities or conditions at the workplace where there is a known or reasonably foreseeable risk to persons or property, • Be completed before work begins on the relevant activity, • Be documented at the time of planning, and • Revise and document plan as needed • Ensure all workers are trained in the plan

Summary of Knowledge and Skills

Summary of Knowledge to be Assessed	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Magazine security systems • How to develop a plan in line with regulation
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Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Develop, adjust and document a blasting plan • Secure explosives for transport • Use documentation

Blasting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.

Unit	1069
Title	Blasting and Post Blasting Activity
Document	Unit of Competency



Description	<p>This unit is about:</p> <ul style="list-style-type: none"> • Remove and Transport Explosives; • Safety and Load Blast Prep; • Firing the Blast; and • Post Blast Procedures.
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites:</p> <ul style="list-style-type: none"> • 1163 – Recognize, Evaluate and Control Blasting Hazards • 1164 – Describe Terminology and Documentation • 1165 – Describe Tools and Equipment for Blasting • 1166 – Describe Regulations and Standards relate to Blasting • 1167 – Describe Explosives for Blasting • 1089 – Describe and Operate Rock Drill • 1168 – Prepare for Blasting Activity • Road Building Occupational Skills Units as Required
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Forestry Blaster – Road Building
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Element of Competence	Competence Outcomes
1. Remove and Transport Explosives	<p>1.1. Demonstrate ability to remove and transport explosives at site.</p> <p>Remove and transport explosives must include:</p>



Element of Competence	Competence Outcomes
	<ul style="list-style-type: none"> • Only removed when required, in a locked day box when not being used • Explosives guarded by competent individual at all times • Detonators stored in crush proof container
<p>2. Safety and Load Blast Prep</p>	<p>2.1. Demonstrate ability to ensure all safety measures are in place prior to blasting.</p> <p>Safety measures must include:</p> <ul style="list-style-type: none"> • No smoking within 50 ft, only approved personnel present, explosives and detonators apart until last moment, signage • Blaster must have visual control over non-certified personnel who are handling explosives • Assess if water is in holes • Re-check tie-in <p>2.2. Demonstrate ability to prepare and load blast.</p> <p>Load blast must include:</p> <ul style="list-style-type: none"> • Drill pattern, direction of holes, timing, spacing, collars, proper stemming, bit size • Measure powder when putting in holes • Assess the burden – keeping control of the rock • Delays – blast design section • Single/double primer (how and where)
<p>3. Firing the Blast</p>	<p>3.1 Demonstrate ability to fire the blast safely.</p> <p>Fire the blast must include:</p> <ul style="list-style-type: none"> • Clear the danger area • Radio check for NOTAM



Element of Competence	Competence Outcomes
	<ul style="list-style-type: none"> • Guard the blast (danger zone) • Sound 2-minute warning • Fire the blast
<p>4. Post Blast Procedures</p>	<p>4.1. Explain and demonstrate ability to conduct post blast procedures.</p> <p>Post blast procedures must include:</p> <ul style="list-style-type: none"> • Only blaster of record allowed in the danger zone until all clear is sounded (radio) • Identify fly rock, limbs, drill holes that didn't go off. • Completes post assessment of the blast • Document post blast procedure <p>4.2. Explain how and demonstrate ability to deal with misfires.</p> <p>4.3. Explain how and demonstrate ability to transport explosives and related material back to storage.</p> <p>Transport explosives must include:</p> <ul style="list-style-type: none"> • Zero out, revise or new transportation documents, • Placards • proper packaging (back into correct box) • day boxes • magazines kept clean • deal with used boxes (not back to mag site) • explosives recorded back into magazine logs

Summary of Knowledge and Skills

<p>Summary of Knowledge to be Assessed</p>	<p>For this unit, a competent worker must understand:</p> <ul style="list-style-type: none"> • Removal and transport of explosives • Post blast procedures
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	<ul style="list-style-type: none"> • How to deal with mis-fires • Transport of explosives back to storage.
Summary of Skills to be Assessed	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Remove and transport explosives • Ensure all safety measures are in place • Prepare and load blast • Fire the blast safely • Conduct post blast procedures • Deal with misfires • Transport explosives and other material back to storage.

Blasting Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence must be on record of competence achieved.</p> <ul style="list-style-type: none"> • Training Modules are available for this unit.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Competency conversation is available for this unit. • Practical assessment is available for this unit.
Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none"> • Trainer • Assessor • Supervisor.



Unit	1028
Title	Describe and Operate Chainsaw
Document	Unit of Competency

Description	<p>This is a knowledge and ability unit about:</p> <ul style="list-style-type: none"> • Chainsaw Components and Safety Features; • Chainsaw Inspection and Maintenance; • Safe Transport and Carrying of Chainsaw; • Potential Risks associated with Chainsaw Use; • Basic Chainsaw Operation and Ergonomics; and • Limbing and Taping
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Regulatory Requirements	<p>It is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulations related to the work being conducted. A full list of OHSR related to this unit can be found in the relevant package.</p>
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Prerequisite(s)	<p>This unit has the following prerequisites for fallers:</p> <ul style="list-style-type: none"> • 1002 – Describe Forest Industry; or • 1033 – Describe Wildfire Preparedness; or • 1034 – Describe Oil and Gas Industry.
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Occupations	<p>This unit is a component of the following occupations:</p> <ul style="list-style-type: none"> • Bucker – Forest Industry, Wildfire Service, Oil and Gas Industry • Faller – Forest Industry, Wildfire Service, Oil and Gas Industry • Other forest industry occupations where applicable.
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Element	Competence Outcomes
<p>1. Chainsaw Components and Safety Features</p>	<p>1.1. Identify components of a chainsaw in accordance with manufacturers' specifications.</p> <p>Components of a chainsaw must include:</p> <ul style="list-style-type: none"> • Handlebar, throttle lock, chain brake, chain catcher, on/off switch, muffler, dogs, bar tip, chain, sight lines, choke, guide bar, pull cord, anti-vibration mounts, fuel tank and cap, oil tank and cap, bar nuts, decompression switch, spark plug, air filter, rear hand guard. <p>1.2. Identify the safety features of a chainsaw and the control of hazard or injury they provide.</p> <p>Safety features of a chainsaw must include:</p> <ul style="list-style-type: none"> • Chain brake, chain catcher, throttle lock. • Handlebar (full wrap for falling), chain muffler and spark arrestor, chainsaw dogs, sight lines, anti-vibration mounts, decompression switch. <p>1.3. Describe when a chainsaw should not be operated.</p> <p>Chainsaw should not be operated must include:</p> <ul style="list-style-type: none"> • Dragging clutch, missing a chain catcher, the chain brake is not working, the throttle lock is not working, and broken anti-vibration mounts.
<p>2. Chainsaw Inspection and Maintenance</p>	<p>2.1. Inspect and maintain chainsaw in accordance with manufacturers' specifications including requirements for daily, weekly, and monthly maintenance.</p> <p>Inspect and maintain chainsaw must include:</p> <ul style="list-style-type: none"> • Air filter, chain brake, fuel filter, spark plug, fuel/oil tanks, spark arrestor, starter recoil assembly, guide bar, idle screw, clutch, chain sprocket, chain catcher, throttle lock-out, vibration mounts, dog screws, plastic chain guides, recoil spring. <p>Inspect and maintain chainsaw may include:</p> <ul style="list-style-type: none"> • Carburetor, muffler, saw body, cooling fins and air intake. <p>2.2. Identify chain parts and conduct chain maintenance in accordance with manufacturers' specifications.</p> <p>Chain parts must include:</p>



Element	Competence Outcomes
	<ul style="list-style-type: none"> • Cutting edge, gullet, raker, rivet, side strap, driver. <p>Conduct chain maintenance must include:</p> <ul style="list-style-type: none"> • Filing procedure and tools (including using a raker gauge), floating drive sprocket inspections, guide bar and chain inspection, selecting appropriate chain length and gauge for the guide bar. <p>2.3. Identify spare parts and repair tools required on the worksite in accordance with best practices.</p> <p>Spare parts must include:</p> <ul style="list-style-type: none"> • Spare chains and guide bar or bar tip, air filter, starter rope, sprockets, spark plugs, screws, spare filing tools, clutch bearing, clutch, chain tensioner. • Second operational chainsaw may cover spare parts. <p>Repair tools must include:</p> <ul style="list-style-type: none"> • Bar wrench, round file, flat file.
3. Safe Transport and Carrying of Chainsaw	<p>3.1. Demonstrate ability to secure chainsaw when using transport.</p> <p>Transport may include:</p> <ul style="list-style-type: none"> • Potential hazards related to types of transport. • Vehicle, ATV, helicopter and airplane, snowmobile, UTV, marine.
4. Potential Risks Associates with Chainsaw Use	<p>4.1. Explain the hazards related to fueling and ability to fuel safely.</p> <p>Hazard related to fueling may include:</p> <ul style="list-style-type: none"> • Open flames, fuel geyser. <p>Ability to fuel safely must include:</p> <ul style="list-style-type: none"> • Two stroke engine fuel to oil mix ration, distance from worksite. <p>4.2. Describe immediate potential risks related to chainsaw use.</p> <p>Immediate potential risks related to chainsaw use may include:</p>



Element	Competence Outcomes
	<ul style="list-style-type: none"> • Kickbacks, chain thrown, burns, exhaust emissions, crush or struck by objects, slips, trips, falls, projectiles from chain. <p>4.3. Describe potential long-term injuries related to chainsaw.</p> <p>Potential long-term injuries related to chainsaw use may include:</p> <ul style="list-style-type: none"> • Loss of hearing, vibration disease (Raynaud's), MSI.
<p>5. Basic Chainsaw Operation and Ergonomics</p>	<p>5.1. Use personal protective equipment (PPE related to chainsaw use).</p> <p>PPE related to chainsaw use must include:</p> <ul style="list-style-type: none"> • Leg, hand, face, eye protection. <p>5.2. Compare chainsaw size and bar length suitability for the job in accordance with timber type and ergonomic factors (avoidance of overreaching).</p> <p>5.3. Carry chainsaw to and from the worksite and from cut to cut safely.</p> <p>Carry chainsaw must include:</p> <ul style="list-style-type: none"> • Chain stopped before moving from cut to cut, apply chain brake if taking more than three steps without making another cut or saw shut off, brake applied before taking either hand off chainsaw. <p>5.4. Describe the step and demonstrate the ability to conduct basic bucking and cutting sequences in a controlled environment.</p> <p>Basic bucking must include:</p> <ul style="list-style-type: none"> • Top bind, bottom bind, end bind, side bind, boring, V cut. • Use of dogs. • Identify pivot points. <p>Cutting sequences must include:</p> <ul style="list-style-type: none"> • Determining compression and tension, sequences of cut, cutting compression side first, monitor log for movement, finishing the cut. <p>5.5. Demonstrate knowledge of and ability to conduct bucking activities ergonomically correct to reduce MSI.</p>



Element	Competence Outcomes
6. Limbing and Taping	<p>6.1. Describe hazards <i>related to limbing</i>.</p> <p><i>Hazards related to limbing</i> may include:</p> <ul style="list-style-type: none"> • Struck by overhead debris/material, unexpected movement, cuts from chainsaw, struck by limb or chainsaw as a result of limb compression or limb tension, chainsaw kickback, cut or puncture injury by angled cuts (pigs ears) and branch stubs, projectiles from chain (loose bark and small branches), falling from log, slips, trips and falls. <p>6.2. Apply <i>safe limbing procedures</i>.</p> <p><i>Safe limbing procedures</i> may include:</p> <ul style="list-style-type: none"> • Know when to cut supporting limbs, use relief cuts to release tension on loaded limbs, make flush cuts at bole of tree (no pig ears), limb top and both sides of tree, no cross-body limb cutting, constantly reassess for overhead hazards, power head should not be above shoulder height, ensure secure footing before making each cut, cut large limbs off in sections. <p>6.3. Describe hazards <i>related to taping</i> and how to tape and measure in accordance with safe work procedures.</p> <p><i>Hazards related to taping</i> may include:</p> <ul style="list-style-type: none"> • Slips, trips or falling off log • Cutting fingers on the tape edge as it rewinds • Being struck by tape as it rewinds • Puncture wounds from tape

Summary of Knowledge and Skills

Summary of Knowledge to be	For this unit, a competent worker must understand:
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<p>Assessed</p>	<ul style="list-style-type: none"> • Components of a chainsaw • Safety features of a chainsaw • Inspection and maintenance requirements of chainsaws • Chain parts and chain maintenance • Common repair tools • Common spare parts • How to secure and transport chainsaws • Hazards related to fueling • Immediate potential risks related to chainsaw use • Potential long-term injuries related to chainsaw use • PPE related to chainsaw use • Chainsaw and bar length suitability for job • When chainsaws should not be operated • How to carry a chainsaw • Hazards related to chainsaw use • Basic bucking and cutting sequences • Hazards related to limbing and tapping • Safe limbing procedures • How to buck in an ergonomically correct position.
<p>Summary of Skills to be Assessed</p>	<p>For this unit a competent worker must be able to:</p> <ul style="list-style-type: none"> • Inspect and maintain a chainsaw • Conduct chainsaw maintenance • Secure chainsaw for transport • Carry chainsaw long distances safely • Fuel chainsaw safely • Operate chainsaw with both hands



	<ul style="list-style-type: none"> • Carry chainsaw to reduce MSI • Conduct pre-work inspections of a chainsaw • Conduct basic bucking and cutting sequences • Apply safe limbing procedures • Use PPE related to chainsaw • Handle chainsaw using safe work procedures • Buck in an ergonomically correct position.
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General Forestry Assessment Guide

General Information	<p>Competence outcomes requiring “knowledge of” can be assessed through competency conversations or written assessment. Evidence should be on record showing the outcomes have been met.</p> <p>Competence outcomes requiring “ability to” or skills must have evidence on record demonstrating competence multiple times in a variety of contexts and may be holistically assessed with relevant work activities.</p> <ul style="list-style-type: none"> • The outcomes of this unit may be met through a training course. • Training modules are available for this unit. • Training audit/competency check tool is available for this unit. • A competency conversation is available for this unit. • *Skills to be assessed or “ability to” for this unit are holistically assessed with the summative practical tool. • This unit is required for Certificate of Qualification – Faller.
Evidence to be Assessed	<p>Minimum evidence requirements for this unit must include:</p> <ul style="list-style-type: none"> • Completion of training module and formative assessments. • Completion of competency conversation where applicable. • All required “skills to be assessed” demonstrated multiple times in a variety of contexts. <p>Faller - Valid evidence must be recorded using documentation mapped to the outcomes or by using the electronic evidence gathering tool.</p>



Evidence Sign Off	<p>Evidence must be signed off by designated:</p> <ul style="list-style-type: none">• Trainer• Assessor• Supervisor. <p>Final evidence sign off for Certificates of Qualification is the responsibility of the Quality Assurance – Internal and External Verifiers, a function of the relevant administrator.</p>



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