# CONSTRUCTSAFE TIER 2 HEALTH AND SAFETY COMPETENCY TEST - EXCAVATOR FRAMEWORK

New Zealand
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Version 1.1

## Table of contents

## 1. Introduction

This framework document allows those who design and contribute to construction health and safety training content to align with ConstructSafe Tier 2 Health and Safety Competency assessment for Excavators requirements. The intent is to make it easy for training content to meet the knowledge and aptitude requirements that candidates need to pass the test.

The framework was developed by a collaboration between Broadspectrum, Civil Contractors NZ, CHASNZ, Downer, Fletcher, Fulton Hogan, Heb, Higgins, Goodmans, McConnell Dowell, NZ Transport Agency, QRS.
The framework has been divided into module headings that match the ConstructSafe Tier 2 test structure.

### 1.2 Candidate minimum required knowledge

Candidates undertaking a ConstructSafe Tier 2 Excavator Health and Safety Competency Assessment must have the ConstructSafe Tier 1 Foundation Health and Safety competency to access this assessment.

### 1.3 Test framework

The framework for the ConstructSafe Tier 2 Health and Safety Competency Assessment for Excavators is outlined on the following pages and was created by representatives of industry.

### 1.4 Test summary

The test for this framework has 60 questions, which will cover all aspects of the framework.

To achieve this competency, a candidate must get 90% or more.

### 1.5 Additional components

Following the theory assessment, this competency requires successful candidates to be assessed at work across all of the framework elements at least once every three years.

Where candidates cannot demonstrate ongoing competency through at work assessment over this period, a candidate is required to undertake this ConstructSafe assessment again.

| Risk Area | Identified risk | Controls | Expected knowledge outcome (Candidate can…) | Learning outcome |
|---|---|---|---|---|
| **Planning** | Work requirements. | Work safety plans (Risk assessments, job plans, Safe work Method statements or processes required to undertake work safely). | Can understand the requirement for a safety plan, written or communicated verbally dependent on the likely work interactions. | 1.01 |
| | | | Can understand, interpret and relay to others the work scope and work is to be done. | 1.02 |
| | | | Confirm the work area to be serviced are in accordance with job instructions. | 1.03 |
| | | | Confirm method and sequence of work. | 1.04 |
| | | | Understand any safety controls or hold points and process required to continue work. | 1.05 |
| | | | Understand and verify appropriate exclusion zones are in place. | 1.06 |
| | | | Identify any parts of the plan which are unsafe before operating the equipment. | 1.07 |
| | | | Checks all permits are in place. | 1.08 |
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| | Equipment choice. | Understand the characteristics, capabilities, and limitations of the different types of equipment. | Can select and relay the most appropriate type of equipment for the work task and work area. | 2.01 |
| | | | Can convey where equipment specifications are available for operator use. | |
| | | | Can identify the limits of the equipment to be used. | 2.02 |

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| | | | Can relay and escalate the need for a different type of equipment for specific tasks. | 2.03 |
| | | | Can communicate their level of competency for equipment to be used, and identify the limits of the operator. | 2.04 |
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| | Work area (Site) specific controls. | Understands agreed communication protocols between spotters, truck drivers, and other site personnel. | Can identify and relay common site communication controls. | 3.01 |
| | | | Can respond to changes from common site communication or control. | 3.02 |
| | | | Can recognise and relay the need to improve work planning where communication or site specific controls do not meet common standards of safety. | 3.03 |
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| | | Work area specific control measures. | Can identify any specific controls needed due to services in the work area | 4.01 |
| | | | Can identify the need for specific controls due to work area environment (Ground stability, slopes, proximity to other parties, access and egress) | 4.02 |
| | | | Can identify and relay site traffic plan requirements. | 4.03 |
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| | Emergency controls. | Site emergency controls specific to plant. | Can identify and relay the stop work procedure for those entering the operator area of influence. | 5.01 |
| | | | Can identify and relay the controls for spillage of fuel or substances. | 5.02 |

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| | | | Can Identify and relay common environmental controls; Including reduction of air, water or land pollutants. | 5.03 |
| | | | Can identify and relay common health controls; Including the need to reduce vibration, human pollutants. | 5.04 |
| | | | Can identify emergency zones for plant. | 5.05 |
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| **Pre Start** | Differing machine class or type than was planned. | Manufacturers operator manual or information. | Can locate, or identify where manufacturer information is held. | 6.01 |
| | | | Can stop work where relevant safety information particular to equipment is not available. | 6.02 |
| | | | Can confirm that they hold appropriate competency for selected equipment. | 6.03 |
| | | | Can stop work and escalate to supervisor when competency for machine type is not met. | 6.04 |
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| | | Licence for machine class and weight. | Can confirm they hold appropriate licence class and machine weight. | 6.05 |
| | | | Can understand and relay the need to escalate to supervisor where competency is not held. | 6.06 |
| | | | Can confirm they have appropriate competency on this class. | 6.07 |
| | | | Can identify when there is a need for familiarisation on this particular machine. | 6.08 |
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| | Defective or inoperable equipment. | Pre Use checks. | Can identify and follow any specific manufacturer, company or work area requirements for prestart. | 7.01 |

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| | | | Can demonstrate a safe approach to the machine. | 7.02 |
| | | | Can identify the manufacturer or safety specific log book or instructions. | 7.03 |
| | | | Can identify and confirm the presence of emergency equipment. | 7.04 |
| | | | Can identify any defects in the cab area including warning lights through the operating system. | 7.05 |
| | | | Can identify and confirm the safe condition of moving external parts (Tyres, moving levers or similar). | 7.06 |
| | | | Can identify and confirm the safe condition of safety critical machine parts and controls, including: missing or damaged pins, rams, keeper plates, hoses, fittings, worn skid plates, cutting edges, bucket / fork pins are in place and secure. | 7.07 |
| | | | Can identify and confirm the safe condition of internal parts including: oil level, water level, brake fluid, steering fluid, pneumatic operation fluid, equipment is properly greased). | 7.08 |
| | | | Can identify and confirm the safe condition of guards in place, including: guards are locked in place, guards display no visible damage, guarding systems have not been modified. | 7.09 |
| | | | Takes appropriate steps to ensure personal safety around the machine including: Access and egress of the machine, machine is locked from operation during pre use check, operator has isolated the machine from other persons during pre use check. | 7.10 |

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| | | | Can identify the need to remove a machine from use due to safety concerns. | 7.11 |
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| | | Lock out/make safe controls. | Can identify, relay and escalate the need to lock out a machine due to safety controls. | 8.01 |
| | | | Can identify and communicate common machine lock out controls. | 8.02 |
| | | | Can identify a lock out control and its meaning for the operator. | 8.03 |
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| **Unloading or loading of machinery for transport** | Rolled plant, damage to equipment, people, work area. | Operator must be capable of securing/un-securing the machine for transport, whilst working with others. | Can demonstrate and relay the safe positioning of truck and trailer and that it is set up correctly (level ground, legs down, safe access and egress) | 9.01 |
| | | | Can identify and communicate that the attachments are in the correct position for movement | 9.02 |
| | | | Can demonstrate and explain how operator control of plant reduces risk throughout plant movement | 9.03 |
| | | | Can communicate and obey hand signals, or agreed signals given by spotter. | 9.04 |
| | | | Can relay and demonstrate why plant should be positioned in a central position on transporter. | 9.05 |
| | | | Can relay and demonstrate safe plant state (Lowered attachments, movement security, locked guards) once in position. | 9.06 |
| | | | Can demonstrate and explain why plant controls must be in neutral, pivot lock secured (if fitted), | 9.07 |

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| | | | park brakes applied, keys removed and secured and chained down on trailer. | |
| | | | Can explain and demonstrate stop work action where safe conditions for loading or unloading are unable to be implemented. | 9.08 |
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| **Basic control and manoeuvrability** | Harmful events due to mis communication. | Understands and uses site or agreed communication methods with others on site. | Can identify and communicate the appropriate hand signals, radio protocols and other communications methods used on the site or work area. | 10.01 |
| | | | Can identify and demonstrate when a spotter is needed and how they should be positioned for safe communication and operation. | 10.02 |
| | | | Can demonstrate and communicate clearly and appropriately with spotters, other plant operators and other workers. | 10.03 |
| | | | Can relay and demonstrate stop work protocol where agreed communication cannot be made. | 10.04 |
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| | Events during normal operation causing harm to people, equipment or the work area. | Competent control of machinery. | Can relay and demonstrate why the machine must be manoeuvred smoothly and in a controlled manner, ensuring operator control of the machine at all times. | 11.01 |
| | | | Can relay and demonstrate the need for spatial awareness in clear zones, restricted work areas, or around services or contained substances. | 11.02 |
| | | | Can relay the need for and demonstrate smooth movement of bucket through all positions, giving consideration to the work area. | 11.03 |

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| | | | Can relay why there is a safety need to be able to work to planned tolerances. | 11.04 |
| | | | Can relay and demonstrate changing excavator ancillaries appropriately. | 11.05 |
| | | | Can relay and demonstrate utilising the safety mechanism/pin/wedge specific to the plant. | 11.06 |
| | | | Can relay and demonstrate the need for a stop work action when there is risk to people or causing damage. | 11.07 |
| | | | Can relay and demonstrate the need to position the machine on level stable ground with clearance from trenches, batters, benching or soft shoulders. | 11.08 |
| | | | Can explain and demonstrate why the machine must manoeuvre with adequate clearances, considering: overhead wires, underground services, dangerous materials, other equipment, recently filled trenches | 11.09 |
| | | | Can explain and demonstrate why the operator must maintain control when working around other machines, personnel, structures, traffic, survey pegs. | 11.10 |
| | | | Can demonstrate machine control on slopes and uneven ground. | 11.11 |
| | | | Can relay and demonstrate travel to the safe speed limit. | 11.12 |
| | | | Can relay and demonstrate the need for a stop work action when there is risk to people or causing damage. | 11.13 |
| | | | Can identify and stay within exclusion zones. | 11.14 |

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| | | | Can identify and demonstrate stop work action where safe control is not maintained. | 11.15 |
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| | Travel between different work areas or sites. | Competent navigation of machinery. | Can identify and demonstrate a travel path for the machine to be driven on where no traffic plan is in place, by assessing risks including: traffic, ground conditions, interaction with people, plant or wildlife, live services and the travel capabilities of the machinery including considerations of travel with front bucket. | 12.01 |
| | | | Can identify and demonstrate travel at legal and safe speed. | 12.02 |
| | | | Can explain and demonstrate why the excavator bucket must be lowered while travelling. | 12.03 |
| | | | Explain and demonstrate how materials are carried safely - including when reversing, on slope. | 12.04 |
| | | | Can explain and demonstrate how to safely move up and down benches. | 12.05 |
| | | | | |
| | Changed work environment. | Operator understands limits to their own competency and when specialist knowledge or qualifications are required. | Can explain and demonstrate stop work action following a changed work condition. | 13.01 |
| | | | Can explain and demonstrate close down action where a changed condition is beyond the safe competency limit of an operator. | 13.02 |
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| **Basic operations** | Constructing a stock pile. | Operator must work within limits of machinery whilst demonstrating ongoing risk assessment during operation. | **Operator can explain and demonstrate;** | |
| | | | • Ensures the work area is flat and stable. | 14.01 |
| | | | • Travels forward up the ramp. | 14.02 |
| | | | • Forms the stockpile correctly following job instructions. | 14.03 |
| | | | • Ensures there are sufficient windrows on the ramp of the stockpile. | 14.04 |
| | | | | |
| | Loading haul units. | | **Operator can explain and demonstrate;** | |
| | | | The haul unit/s capacity, and how to find this information. | 15.01 |
| | | | The safest positioning of trucks and loader for loading and unloading. | 15.02 |
| | | | Exclusion zones and ensure they are appropriately set up. | 15.03 |
| | | | Communicates with truck driver (and agreed communication. | 15.04 |
| | | | How risks of travel and swing are minimised. | 15.05 |
| | | | Smoothly raise and dump load under control centrally on tray with minimal spillage. | 15.06 |
| | | | Clearance of the truck and why it is safest to make no contact. | 15.07 |
| | | | Why the operator must not lift over cabs. | 15.08 |
| | | | Why the operator must not overload the haul unit. | 15.09 |
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| | Levelling and house keeping. | | Can demonstrate and relay how to maintain the bucket to avoid spillage. | 16.01 |
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| | Operating on Slopes or Uneven Ground. | Operator must work within limits of machinery whilst demonstrating ongoing risk assessment posed by the work area during operation. | **Operator can explain and demonstrate;** | |
| | | | How weight distribution changes when turning and the safety implications. | 17.01 |
| | | | Why they must travel directly up or down slope, and must not traverse. | 17.02 |
| | | | Why they must assess the risk posed by a slope to adjust to a safe speed for travelling on an incline. | 17.03 |
| | | | Why they must be aware of uneven or soft surfaces, and the risks to people, plant and the work environment. | 17.04 |
| | | | Why they must keep a safe distance from edges, drop-offs or other structures. | 17.05 |
| | | | Why, when commencing a run to compact a road, they must commence at the kerbside and not the crown or high side of the fill area. | 17.06 |
| | | | Why they must assess the risk of using the vibrator on the first run on a slope of uncompacted materials or near buildings. | 17.07 |
| | | | The stop work and recovery action when a machine has reached its limit of control. | 17.08 |

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| | Excavating, stripping and trimming materials. | | Can Identify the key risks to themselves and others when stripping, trimming and excavating | 18.01 |
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| **Close down** | Harm to people, equipment, premises and the environment. | Close down checks. | Can explain and demonstrate the need to park the machine in a low risk area including: stable and level ground, away from chemical or fire hazards, not causing traffic hazards, not preventing emergency access or egress. | 19.01 |
| | | | Can identify and follow any specific manufacturer, company or work area requirements for close down. | 19.02 |
| | | | Can demonstrate a safe approach to the machine. | 19.03 |
| | | | Can identify any defects in the cab area including warning lights through the operating system. | 19.04 |
| | | | Can identify and confirm the safe condition of moving external parts (Tyres, moving levers or similar). | 19.05 |
| | | | Can identify and confirm the safe condition of safety critical machine parts and controls. | 19.06 |
| | | | Can identify and confirm the safe condition of internal parts including: oil level, water level, brake fluid, steering fluid, pneumatic operation fluid). | 19.07 |

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| | | | Can identify and confirm the safe condition of guards in place, including: guards are locked in place, guards display no visible damage, guarding systems have not been modified. | 19.08 |
| | | | Takes appropriate steps to ensure personal safety around the machine including: Access and egress of the machine, machine is locked from operation during close down check, operator has isolated the machine from other persons during close down check. | 19.09 |
| | | | Can identify the need to report any defects, maintenance requirements or safety concerns related to a machine. | 19.10 |
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| | | Close down lock out/make safe controls. | Can leave the machine in a safe condition, bucket is lowered, locked out to none competent people. | 20.01 |
| | | | Can identify, relay and escalate the need to lock out a machine due to safety controls. | 20.02 |
| | | | Can identify and communicate common machine lock out controls. | 20.03 |
| | | | Can identify a lock out control and its meaning for the operator. | 20.04 |
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| **Specialist operations (records additional competencies beyond basic competency. These are not included** | Lifting. | Selection of lifting equipment capable, and in condition to perform the task. | **Operator can explain and demonstrate;** | 21.01 |

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| **in the theory test module)** | | | | |
| | | Operator must have competency to perform lifting operations and can identify where their competency is not sufficient. | Why they cannot lift by attaching any slings or rigging unless they hold a specific lifting competency. | 21.02 |
| | | Operator must be competent to identify changed work conditions and take action to prevent harmful events. | Operator must have unit standards 20875 lifting with mobile plant and 3789 sling regular loads and communicate or equivalent. | 21.03 |
| | | | Why the operator must have a loading chart available. | 21.04 |
| | | | The weight of material or items in the bucket and its impact on stability. | 21.05 |
| | | | How to assess the weight of a commonly lifted object. | 21.06 |
| | | | How to check that lifting points and rigging equipment have been certified. | 21.07 |
| | | | The included angle 120deg rule and why it exists/what effect it has on weight on the lifting gear. | 21.08 |
| | | | Selection the most appropriate rigging configuration. | 21.09 |
| | | | Identification and selection of appropriate dropzones. | 21.10 |
| | | | How to communicate effectively with spotter/rigger/banksman/dogman. | 21.11 |
| | | | Stop work action and recovery process during changed conditions. | 21.12 |

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| | Changing ancillaries. | Operator must identify how to find suitable materials and how to remove and install existing materials safely. | **Operator can explain and demonstrate;** | 22.01 |
| | | Operator must be capable of identification of faulty or unsafe materials. | How to position the machine in lowest risk position to change ancillaries. | 22.02 |
| | | | Identification and removal of locking pin and unlock clamp, ensuring components are not lost or damaged. | 22.03 |
| | | | How to detach the ancillary in a safe and stable place to minimise risk to other, equipment, work areas and the environment, disconnection of hoses (as required). | 22.04 |
| | | | How to attach a new ancillary, insert locking pins and correctly fit hoses (as required). | 22.05 |
| | | | How to conduct a function test to ensure the new ancillary is correctly fitted and functions correctly. | 22.06 |