

## 1.0 Introduction

### 1.1 Prevailing legislation

As required by section 36 of the NZ Health & Safety at Work Act, Hire Companies have a “*Primary Duty of Care*” and “*must ensure, so far as is reasonably practicable ... (b) the provision and maintenance of safe plant and structure*”.

As required by section 42 of the NZ Health & Safety at Work Act, Upper Hutt Hire has a responsibility as “*Duty of PCBU who supplies plant substances or structures*” to ... (2) ... “*must, so far as is reasonably practicable, ensure that the plant... is without risks to the health and safety of persons-*

*(a) who, at a workplace, use the plant... for a purpose for which it was designed or manufactured; or...*

*(e) who carry out any reasonably foreseeable activity (such as inspection, cleaning, maintenance or repair) at a workplace in relation to-*

*(i) The assembly or use of the plant for a purpose for which it was designed or manufactured...*

### 1.2 Compliance with AS/NZS4024.1:2014 standards

The objective of the AS/NZS4024.1:2014 standards is to enable those who design, manufacture, supply, control, use and maintain machinery to minimise risk to health and safety of those working with or near the machinery. This standard may provide some health & safety guidance for the purposes of a risk assessment.

### 1.3 Compliance with EN 609-1:2017 - Agricultural and forestry machinery - Safety of log splitters - Part 1: Wedge splitters

This European standard provides good guidance on the design of wedge-style log splitters. The current models of log splitters appear to meet the requirements for two-handed controls (still to be verified).

### 1.4 Risk Assessment

This risk assessment is carried out on the current model vertical log splitter using two-handed control and some guarding. While there may be further design development the focus is to re-evaluate the current risk assessment and identify any immediate changes that can be made



## 2.0 HIANZ Risk Assessment for ESDS

A risk assessment was carried out in July 2019, looking at the perceived risks then.

The HIANZ ESDS Risk assessment identifies the following hazards:

HIANZ Equipment Risk Assessment							16-Jul-19
Step 1: Create a new page for each piece of equipment			Step 2: Sort Yes / No Step 3: Find Equipment Risk Rating and prioritise				
Equipment	Log Splitter	Risk	Yes/No	Likelihood	Consequences	Risk Rating	Comments
Part A: Acute (immediate) risks							
				Likelihood	Consequence	Risk rating	Verify ✓
5	Gravity	Is there a risk of something falling and injuring someone?	Yes	Moderate	Major	Extreme	Risk of logs and bits of split logs falling on toes. Take care, wear protective foot wear
9	Mechanical	Are there any high speed or high force blades or devices	Yes	Moderate	Catastrophic	Extreme	High Force blades. One person only, keep hands and limbs well clear
0	Humanistic	Could the Safety guards or devices be removed or overridden?	Yes	Moderate	Catastrophic	Extreme	Forbidden to remove or override safety features
1	Humanistic	Could the machinery be used in unintentional situations?	Yes	Moderate	Catastrophic	Extreme	Never split across the grain!
8	Pressure	Is there a risk of pressurised debris causing injury?	Yes	Unlikely	Major	High	Split timber could be ejected from the splitting blades
4	Motion	Is the equipment greater than 50kg and mobile?	Yes	Unlikely	Major	High	Only operate on level ground. Secure and chock wheels when uncoupled from towing vehicle
0	Sound	Does the equipment produce more noise than 85dB	Yes	Unlikely	Major	High	Noise from 9 - 14 HP motors usually above 85dB, so PPE
2	Emissions	Does the equipment produce noxious fumes?	Yes	Highly Unli	Catastrophic	High	Highly unlikely that a log splitter would be used indoors. Mandatory warning about use in confined areas
5	Environment	Is there a risk associated with operation under adverse weather conditions, eg slippery, high wind?	Yes	Unlikely	Major	High	Take care in wet and /or slipper conditions.
8	Humanistic	Does the operation of the equipment pose a muscular-skeletal risk?	Yes	Moderate	Moderate	High	Take care when lifting heavy logs. Use lifting support or correct lifting techniques
2	Humanistic	Could the use of the equipment be endangered by the Operator under the influence of drugs or alcohol?	Yes	Highly Unli	Major	High	Drug warning
8	Chemical	Is special DG Handling or storage required?	Yes	Unlikely	Major	High	Take care when refueling the machine
1	Mechanical	Is there a risk of entrapment?	Yes	Highly Unli	Major	High	Not really. Blade is relatively slow moving, suggest general warning about loose
2	Humanistic	Does the operation of the equipment expose the operator to excessive exhaustion or stress?	Yes	Highly Unli	Major	High	Include mandatory warning about exhaustion. Risk lower for short term hires (main use)
5	Temperature	Does the machine have hot or cold surfaces?	Yes	Highly Unli	Moderate	Moderate	Be aware of hot exhaust
~	Electrical	Does the equipment contain high voltage power source and/or components?	No				Assume anything with 240V is a potential risk, and that the equipment has been

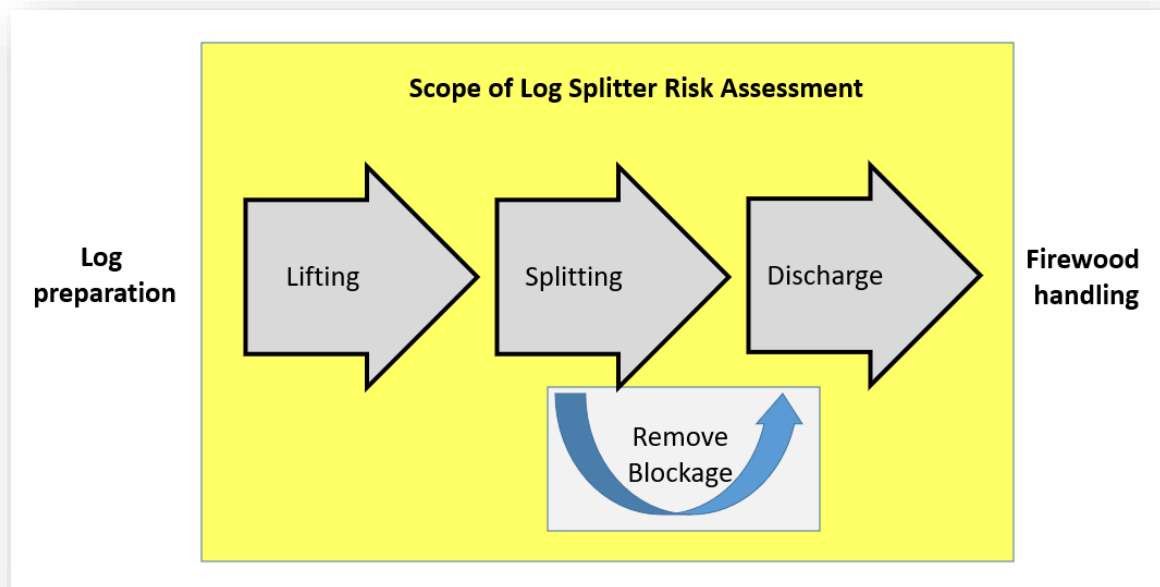
### 2.1 Additional Hazard identified

One additional hazard identified at the HIANZ Log Splitter meeting in February 2021 is the jamming of the splitting wedge with a gnarly log. It was recognised that the HIANZ ESDS template may not accurately identify this as a potential hazard. The HIANZ ESDS template was updated 24 Feb 2021

### 3.0 Scope of assessment

#### 3.1 Steps involving the log splitter

The scope of this assessment will only cover those steps involving the log splitter:



Activities such as log preparation and firewood handling (using split material) are not covered by this risk assessment.

#### 3.2 Chronic versus Acute

This risk assessment will only assess Acute factors as there are no significant chronic (long term) factors. The machines are generally used outside, usually of maximum of one day at a time.

### 3.3 Machines

This risk assessment covers the following machines:

Machine	Features
Brent Smith Vertical Log Splitter	Two handed control, guarding adjacent to the splitting zone. May or may not feature a log lifter attachment.
Levin Saw Makers Vertical Log Splitter	Two handed control, guarding adjacent to the splitting zone, half moon area cut into table
SuperAxe Vertical Log Splitter	Two handed control, guarding adjacent to the splitting zone (may be retro-fitted)

#### 4.0 Risk Assessment

Description of Process:		Risk Assessment of one-person operation of vertical log splitter					23 Feb 2021	
		HAZARD IDENTIFICATION		RISK ASSESSMENT			Comment	Action Required
Activity No.	Activity	Description	Hazard and Potential Consequences	Likelihood	Consequence	Risk		
1	Lifting	Lifting Logs onto splitter (no lifter)	Back strain from heavy or poor lifting technique.	Moderate	Moderate	High	Fit all machines with log lifting device, where possible. Possible cost implication	Investigate cost of retrofitting log lifter
2	Lifting	Lifting Logs onto splitter (no lifter)	Crushed fingers or hand from crush injury when caught between wood and table	Moderate	Major	Extreme	Take care, wear protective gloves. Fit all machines with log lifting devices where possible.	Investigate cost of retrofitting log lifter
3	Lifting	Lifting Logs onto splitter (no lifter)	Splinters from log to hands	Moderate	Moderate	High	Not much you can do. Take care, wear protective gloves	Ensure ESDS has protective gloves as PPE
4	Lifting	Lifting Logs onto splitter (no lifter)	Log ring falls onto feet from table, causing crush injury to feet	Moderate	Major	Extreme	Fit all machines with log lifting device, where possible. Chance of logs slipping off a sloping table. Ensure log splitter is level before commencing operation	Amend ESDS to ensure table is level, ensure PPE includes protective footwear.
5	Splitting	Place log in splitting area and activate hydraulic splitting device (High force)	High force Blade. Risk of amputation or enucleation of tissue, <b>crush injuries to primary operator</b>	Low	Catastrophic	High	Likelihood is very low as the splitter uses two handed controls, thereby removing hands from the immediate splitter area	Repeat warning about keeping hands clear of the splitting area and no overriding hand / safety controls.
6	Splitting	Place log in splitting area and activate hydraulic splitting device (High force)	High force Blade. Risk of amputation or enucleation of tissue, <b>crush injuries to secondary operator</b>	Moderate	Catastrophic	Extreme	Likelihood of second person reaching in and holding log while splitting occurs. It is possible for secondary operator to reach around primary operator and hold unevenly cut log while being split	Can we add extra guarding to prevent secondary operator reaching in? Mandatory warning that only one person in the splitting zone.
7.	Splitting	Potential Misuse: Splitting against the grain.	Splitting a log ring against the grain may exceed the design characteristics of the machine, splinter wood, cause log ring to eject from splitting area	Low	Catastrophic	High	Highly unlikely as a cut ring is far easier to cut flat with a vertical splitter, than trying to hold in place and cut across the grain	Ensure note on ESDS denotes do not split against the grain



8.	Splitting	Removal of blockage	Some gnarly logs may become stuck on the splitting wedge, need to be removed: <b>Blade Still Moving / Retracting</b>	Moderate	Catastrophic	Extreme	During slow cycles, may be possible to place hand in close proximity to wedge while retracting, and get caught between wedge and guard	Add warning to ESDS, never touch wedge when moving! Take care when removing blockages, shut down engine first
9.	Splitting	Removal of Blackage	Some gnarly logs may become stuck on the splitting wedge, need to be removed: <b>Blade Stable</b>	Moderate	Moderate	High	Much safer to remove wood when wedge is stationary	Add warning to ESDS, never touch wedge when moving! Shut down engine first.
10.	Discharge	Discharge of split firewood to side of splitter	Chance of discharged logs falling on someone (toes, feet)	Unlikely	Moderate	Moderate		Amend ESDS to ensure table is level, ensure PPE includes protective footwear, also covered by exclusion zone

## 5.0 Action Points

Based on the assessment of the current machines, the following actions points have been identified:

Activity No.	Activity	Description	Hazard and Potential Consequences	Risk Rating	Action	Status as at 25 Feb 2021
1	Lifting	Lifting Logs onto splitter (no lifter)	Back strain from heavy or poor lifting technique.	High	Investigate cost of retro-fitting log lifter	Request sent to Manufacturer.
2	Lifting	Lifting Logs onto splitter (no lifter)	Crushed fingers or hand from crush injury when caught between wood and table	Extreme	Investigate cost of retro-fitting log lifter	Request sent to Manufacturer.
3	Lifting	Lifting Logs onto splitter (no lifter)	Splinters from log to hands	High	Ensure ESDS has protective gloves as PPE	Verified as included in ESDS
4	Lifting	Lifting Logs onto splitter (no lifter)	Log ring falls onto feet from table, causing crush injury to feet	Extreme	Amend ESDS to ensure table is level, ensure PPE includes protective footwear.	Redrafted into updated version of ESDS
5	Splitting	Place log in splitting area and activate hydraulic splitting device (High force)	High force Blade. Risk of amputation or enucleation of tissue, <b>crush injuries to primary operator</b>	High	Repeat warning about keeping hands clear of the splitting area and no over-riding hand / safety controls.	Redrafted into updated version of ESDS
6	Splitting	Place log in splitting area and activate hydraulic splitting device (High force)	High force Blade. Risk of amputation or enucleation of tissue, <b>crush injuries to secondary operator</b>	Extreme	Can we add extra guarding to prevent secondary operator reaching in for the current model? Mandatory warning that only one person in the splitting zone. Engineering Control	Investigation has found that adding a additional guard to the left hand side of the machine would significantly hamper the operator, especially when lifting logs onto the table, and may result in reduced efficiency and the likelihood of other accidents (such as dropping logs)
7.	Splitting	Potential Misuse: Splitting against the grain.	Splitting a log ring against the grain may exceed the design characteristics of the machine, splinter wood, cause log ring to eject from splitting area	High	Ensure note on ESDS denotes do not split against the grain. Note: one of the advantages of using the vertical machine is that it is more difficult to split across the grain	Verified as included in ESDS
8.	Splitting	Removal of blockage	Some gnarly logs may become stuck on the splitting wedge, need to be removed: <b>Blade Still Moving / Retracting</b>	Extreme	Add warning to ESDS, never touch wedge when moving! Take care when removing blockages, shut down engine first	Redrafted into updated version of ESDS



9.	Splitting	Removal of Blockage	Some gnarly logs may become stuck on the splitting wedge, need to be removed: <b>Blade Stable</b>	High	Add warning to ESDS, never touch wedge when moving! Shut down engine first.	Redrafted into updated version of ESDS
10.	Discharge	Discharge of split firewood to side of splitter	Chance of discharged logs falling on someone (toes, feet)	Moderate	Amend ESDS to ensure table is level, ensure PPE includes protective footwear, also covered by exclusion zone	Verified as included in ESDS
11.	Admin				Update HIANZ ESDS template with question concerning blockage	Updated as version 11.6 2
12.	Admin				Redraft ESDS for Log Splitters, forward to graphic designer for re-issuing	Sent 24 Feb 2021
13.	Admin				Upon receipt of new ESDS, load to HIANZ website and provide notification to all HIANZ Members	