

This week's update looks at **WORK TRAVEL** and highlights two issues that have cropped up in recent incident reports from contractors.

Work Travel – 2nd vehicle loses a wheel

On 20 May a Taupo based forestry contractor was travelling home from work when his vehicle lost a rear wheel resulting in a rollover on the Napier-Taupo Road (photo below). The driver was knocked around and admitted to hospital but is now on the mend.



Then just 10 days ago (23 July) a contractor was driving to work early morning (100 km zone) when wheel nuts came loose on a rear wheel, giving him a fright. The Ute had been serviced three days earlier and the wheels had been removed and not tightened properly.

These two incidents come on the back on another last year when the left rear wheel parted company with a work vehicle on the way home from work. That incident resulted in significant damage to hub and brake components.

The reality is that a wheel is subject to a number of forces which act to loosen the wheel nuts. If one of the wheel nuts loosens then these forces are distributed over the remaining nuts, which can cause the adjacent nuts to loosen as well. As more nuts become loose the process accelerates as the overall clamping force holding the wheel in place decreases. When the clamping force reduces sufficiently the wheel will move on the hub. This results in side loading and further loosens the remaining nuts, which, if not

spotted in time, leads to elongated stud holes, fatigue failure of studs, fretting cracks and in many cases wheel loss.

Main causes of wheel loss or wheel insecurity

- Failure to follow manufacturer's instructions for fitting wheels, particularly applicable to after-market products such as aluminium wheels.
- Failure to tighten wheel nuts to the specified torque, in the correct sequence, or fully tightening the wheel nuts one at a time rather than in stages.
- Failure to retighten wheel nuts after a short period of in-service running (between 50 to 100 kms is commonly recommended).
- Failure to regularly check tightness of wheel nuts.
- Over-tightening, causing stretched/broken studs or causing studs to be pulled through the hub.
- Damaged threads on wheel studs and nuts resulting in insufficient clamping force.
- Paint, rust/scale or dirt between contact surfaces of wheels and hubs or nuts. The mating surfaces must be kept clean, and preferably paint free, to reduce settlement.
- Severe corrosion and/or wasting of wheel studs.
- Damage to the mounting surface of the wheels.
- Wheel spigot fixing centre 'ground out' ie enlarged.
- Incorrect matching of wheel nuts and wheels. (Two piece flange nuts for hub mounted wheels and single piece conical seated nuts for stud mounted wheels).
- Incorrect matching of wheels and wheel hubs (hub mounted and stud mounted).
- Incorrect matching of wheel studs and wheel nuts when non-OEM ('aftermarket') wheels have been fitted reducing the stud length available for correct wheel nut engagement (insufficient 'stud standout').
- Use of inappropriate (impact tools) or non-calibrated equipment when tightening wheel nuts.

NZTA Recommendations

The use of impact tools is a common cause of both under-torquing and over-torquing because the actual torque (and therefore clamping force) applied depends on a wide range of factors. A common approach to the problem of wheel insecurity is to deliberately over torque. This normally results in stud failure.

ALL DRIVERS:

- Periodically inspect wheels during pre-trip walk around inspections for signs of damage, cracked or distorted wheel rims, broken or loose fixings, and signs of wheel or wheel nut looseness (bright metal or rust marks around the nuts or captive washer seating).
- Ensure that after a wheel has been fitted the wheel nuts are rechecked for correct torque after a short period of in-service running. Between 50 to 100 kms is commonly recommended (do not slacken and re-tighten). Maintenance procedures must include a flag to ensure this has occurred.
- Ensure that wheel nuts are checked for security and tightened to the **recommended torque** (manufacturer's spec) with a calibrated torque wrench at routine maintenance intervals.
- Establish causes of wear and damage on loose nuts before re-tightening.
- Ensure that manufacturer's written instructions are followed.

If you have aluminium rims be extra vigilant as nuts tightened against a flat aluminium rim surface are thought to be prone to loosening.

Work Travel - Worker drowned accessing Work Site

The following information has been shared by the NZ Mining & Quarrying H&S Council (MinEx) to enable learnings to be shared by all land based resource industries.

On Friday 18 July 2015 a worker was drowned in the Waimea River near Brightwater while crossing the river on the way to his quarry worksite. WorkSafe NZ are investigating the incident and are yet to report any details beyond the location of the quarry (which is on the true right bank of the Waimea River about a kilometre upstream from the Appleby bridge).

River crossings are a hazard that are present in many mining and quarrying operations and particularly in alluvial gravel and gold operations. Where these hazards are present on the worksite or the access to the worksite, mine and quarry operators need to re-examine their safety management systems to ensure that these hazards are properly managed.

A simple risk assessment involving workers is all that is required to develop some common-sense rules to ensure:

1. Where an alternative bridged/culvert crossing is available workers use this route even if it means a longer route to the worksite
2. That controls are put in place where there is no practical alternative to crossing the river via the river bed such as:
 - Depth markers
 - Regular grading of the access through the bed particularly after high flows
 - Only using appropriate vehicles such as 4WD for crossings
 - Proper guidelines for workers on river crossings

There are learnings here for Forestry.

I can think of at least two occasions where similar circumstances have challenged the decision making of folk in forestry vehicles.

On one occasion they had a go, floated away and had to abandon the vehicle.



On another occasion a log truck made the crossing successfully. The logging crew following the truck pulled the pin and called Search and Rescue, who provided evacuation assistance



The photos below show how things can change quickly after intense rainfall in forestry catchments. If you have to cross a flooded ford you must be 100% sure it can be crossed safely. If in doubt go to PLAN B (B for Better).



Rayonier Engineers / Harvest Planners – Take the time to periodically assess river crossings in your patch. Ensure that approaches are sound and that depth markers and warning signage is in place. Good idea to inspect following flood events to ensure the risk reduction measures (markers / signs) are still in place.

Wayne Dempster (H&S Manager)

“CONTINUOUS LEARNING - OUR SAFETY JOURNEY”

