

Quad Bikes

on

Farms





Please note

This information is for guidance only and is not to be taken as an expression of the law. It should be read in conjunction with the Work Health and Safety Act 2012, the Work Health and Safety Regulations 2012 and any other relevant legislation. To view, go to the WorkSafe Tasmania website at www.worksafe.tas.gov.au

We welcome your feedback on this handbook. Send to: wstinfo@justice.tas.gov.au

For information about registration and licensing of quad bikes contact Department of State Growth on 1300 135 513 or go to www.stategrowth.tas.gov.au

Acknowledgement

WorkSafe acknowledges this guide is based on Quad Bikes on Farms by WorkSafe Victoria (www.worksafe.vic.gov.au).

WorkSafe Victoria's handbook was led by Ballarat University's Victorian Farm Safety Centre. A reference group of industry experts was convened to support the development of this handbook; WorkSafe Victoria also acknowledges the contribution of Farmsafe Australia Inc and the National Coroners Information Service.

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Introduction

Quad bikes are popular and useful machines that help farmers tend to crops and livestock quickly and efficiently. However, quad bikes are also a significant cause of death and injury on farms. The emotional and financial cost of these deaths and injuries to farm families and communities is immense.

This handbook outlines legal requirements and strategies to ensure the safe operation of quad bikes on farms.

This handbook is not a substitute for the operator's manual for your specific quad bike. It should be read in conjunction with your operator's manual because quad bikes can be dangerous when used outside the manufacturer's guidelines.

Quad bikes are not all-terrain vehicles

In April 2009, the Victorian coroner, in an inquest into eight fatalities involving quad bikes, said 'To describe a quad bike as an all-terrain vehicle is a serious overstatement of its capabilities... Quad bikes are described, marketed and sold as all-terrain vehicles. They do not possess all-terrain capability. The description of a quad bike as an all-terrain vehicle creates an impression of invincibility. Manuals replete with warnings setting out the limitations of quad bikes have failed to negate the fallacy.

'Despite warnings to the contrary, there exists the false perception that quad bikes are stable, robust machines with 'go-anywhere' capability. Quad bikes are not all-terrain vehicles.'

Who should read this handbook?

This handbook is for farmers, their family members, workers and contractors. While this handbook focuses on quad bike use on farms, it will be useful to all who operate or manage those who operate quad bikes.

Why should you read this handbook?

The handbook:

- will help quad bike users identify hazards associated with your quad bike
- provides a range of simple solutions that may reduce the potential of incidents and injuries, including checklists to help you identify and control risks associated with the use of quad bikes (you can alter these to suit your property, and you can find them at worksafe.tas.gov.au)
- has information about choosing the right vehicle for the job, safe operation and maintenance
- explains the obligations employers and workers have under the Tasmanian Work Health and Safety Act 2012.

Don't just read this handbook—Act on it

Quad bike operators need to understand the risks associated with the use of quad bikes so they can make informed choices that reduce risks and lead to safe use.

Case study

You're never too old or too experienced to wear a helmet. A 71 year old farmer was killed when she was thrown from her quad bike into a barbed wire fence and hit her head on a rock. She had been checking stock and water. She was found by her son in an area that was deeply rutted, approximately 15 metres from the quad bike which was entangled in the fence. No helmet was worn.

Case study

Even the simplest job can be risky. A 59 year old farmhand was killed traversing a slope along a makeshift road with long grass and a steep, uneven gradient. He had tied steel to the back of his quad bike which toppled over and landed on top of him as he was traversing the slope.

What is a quad bike?

For the purpose of this handbook, a quad bike is defined as any motorised off-highway vehicle designed to travel on four low pressure tyres, having a seat designed to be straddled by the operator and handlebars for steering control, and intended use by a single operator and no passenger.

Quad bikes can be two-wheel drive or four-wheel drive and are sometimes referred to as 'four-wheel motorbikes'. They are only one of many vehicles that are useful for work on farms.

This handbook refers only to single-operator quad bikes as described in the definition above.

In many ways, the quad bike is the modern equivalent of a horse. It carries a person and is reasonably manoeuvrable. Like a horse, a quad bike can pull implements and trailers, help in mustering, and help farmers check stock and fences. For many farmers, quad bikes are indispensable equipment and used almost every day.

But quad bikes have no innate sense of balance, they cannot compensate for poor skills or inexperience, they won't come when called and will never be able to take a severely injured operator home or raise the alarm.

Case study

A farmer was riding a quad bike on his property when it rolled over on an embankment. The man walked approximately 40 metres and then collapsed and died. His body was not located until the following day.

Risk factors

Farmers must make informed choices about the safest and most appropriate vehicles for particular tasks on their farms. Knowledge of the source of risks relating to death and injury, plus an understanding of how to avoid or reduce risk, can help you with the decision-making process.

Quad bike use

Studies of quad bike use show:

- riders of all ages are at risk of death. The age range of those who have died broadly reflects the age distribution of farmers
- the majority of those who have died were quad bike operators; however passengers and bystanders are also at risk
- the majority of fatal quad bike incidents involve males, but females are also at risk
- quad bike-related deaths are associated with a wide range of work activities in agriculture and horticulture
- a significant number of on-farm deaths are associated with recreational activities on farms
- there is a tendency for quad bikes to roll over and cause serious injury or death to operators
- incorrect loading of the quad bike has been associated with rollover deaths. Terrain, slope and surface appear to play key roles in quad bike-related deaths
- the head and chest are the most common body parts injured. Most of these injuries are caused by crushing between the quad bike and the ground or other surface, while others occur when operators are flung onto hard surfaces in a crash
- most injuries and deaths involve the head and cervical spine, crush injuries and asphyxia.

Farmers have been killed while:

- controlling weeds
- mustering/herding/drafting stock
- inspecting property/water/stock
- moving materials
- travelling
- hunting.

Rollover

Rollover is a common event in quad bike incidents. Quad bikes can roll over in any direction — to the front, side or rear. Rollover can occur suddenly, even at low speeds, putting the operator at risk of injury or death from being thrown from the quad bike, trapped, and/or crushed beneath it. The risk of rollover is increased if the quad bike:

- is traversing slopes
- is travelling at high speed
- is towing an implement
- is carrying a heavy or unstable load (like chemicals for spraying)
- has tyres that are under inflated or unevenly inflated.

Case study

A 75 year old man was killed while operating a quad bike equipped with a 50 litre spray tank full of chemical spray. He was working in a wet area on an incline of 20–30 degrees. His wife discovered him lying face down towards the rear of the quad bike, which was on its side on top of the man.

The table below highlights conditions you should consider to ensure the safe operation of your quad bike. If any of the conditions exist, you will need to take steps to control the risk.

Controlling the risk

Equipment and attachments	<ul style="list-style-type: none">■ Loading:<ul style="list-style-type: none">■ overloading■ liquid loads■ unstable or unbalanced loads■ over-sized trailers■ Poor maintenance of both mechanical and safety items■ Incorrect tyres for conditions■ Incorrect tyre pressure■ Inadequate guards to protect hands and feet
Operator characteristics	<ul style="list-style-type: none">■ Age of operator■ Physical fitness of operator■ Operator competency■ Type of activity to undertake; for example, mustering or spraying while operating a quad bike
Operator behaviours	<ul style="list-style-type: none">■ Not observing manufacturer's safety warnings or recommendations for use of quad bike■ Not wearing adequate personal protective equipment (PPE) such as helmets or hearing protection■ Speeding■ Using a single seat quad bike to carry passengers
Environment	<ul style="list-style-type: none">■ Bright sunlight that can affect the operator's vision■ Fences that are hard to see■ Obstacles overhead, ground level or hidden in long grass; for example, stumps and animal burrows■ Terrain variations:<ul style="list-style-type: none">■ mud■ sand■ uneven surface■ frost, snow and floods■ Unpredictable surface changes■ Pavement or bitumen surfaces■ Chemical exposure■ Other vehicles

Legal requirements

Work health and safety

The Work Health and Safety Act 2012 applies to all workplaces, including farms. As a farmer, you may be an employer, a self-employed person, a manager, or a person in control of the farm and as such, you have legal responsibilities under this Act.

These include ensuring that:

- the farm is a safe working environment without risk to the health of your workers
- no one is exposed to risks to their health and safety arising from farm activities. This includes family members, workers, visitors, contractors
- the means of entering and leaving the farm are safe and without risk to health.

If you are an employer, you should:

- consult with your workers and any health and safety representatives on matters that might affect their health and safety
- report serious incidents to WorkSafe Tasmania (this also applies if you are self-employed).

The Work Health and Safety Regulations 2012 have more detailed requirements for identifying and controlling hazards associated with using plant such as quad bikes.

If your workers use quad bikes, you must:

- identify any hazards associated with the quad bikes and their use, and ensure that any risks are removed or reduced
- provide and maintain quad bikes that are safe
- provide and maintain safe work practices for quad bike operations
- provide your workers with sufficient training and supervision so that they can work safely with quad bikes.

Workers must:

- take reasonable care for their own and others' health and safety
- cooperate with their employer in any actions taken to comply with the work health and safety laws.

Registration and licensing

The Department of State Growth administers the registration and licensing of quad bikes.

In general:

- off-road requirements: quad bikes used strictly on private property do not need to be registered and their operators do not have to hold a valid driver licence. Compulsory Third Party insurance is recommended
- on-road requirements: quad bikes used on road or public access areas (even for short periods) must be registered and on-road operators must hold a valid car licence (a learner licence is not sufficient).

The Department of State Growth will only register a quad bike with restricted registration for limited use and with specific conditions.

A restricted registration may be issued for agricultural/industrial use or recreational use.

The usual conditions of registration for quad bikes are:

Agricultural/industrial use

- Limited to sections of road between parts of the one property or separate properties owned by the same operator.
- Quad bike not to be driven/ridden on a public street between sunset and sunrise.
- Distance travelled is not to exceed 10 km in length.
- Quad bike not to exceed manufacturer's loading and towing specifications.
- Driver/rider to hold a current driver licence of the appropriate class.
- Approved helmet must be worn.
- No pillion passengers to be carried.
- Speed not to exceed the lesser of 40km/h or the manufacturer's maximum recommended speed rating when on a public street.

Recreational use

- The driver/rider must comply with directions and advice contained in the most current edition of the Ride around Tasmania guide, available from Service Tasmania.
- Quad bike must not be driven on any classified or council road other than those specifically mentioned in the permit allowing use of the quad bike in a particular area.
- Speed limit on all pathways, tracks or roadways not to exceed the lesser of 40km/h or the manufacturer's maximum recommended speed rating.
- Quad bike to be transported to and from the approved recreation area by truck or trailer
- Quad bike not to be driven/ridden between sunset and sunrise.
- Driver/rider to hold a current driver licence of the appropriate class.
- Approved helmet must be worn.
- No pillion passengers to be carried.

The Registrar of Motor Vehicles can impose any conditions on quad bikes it deems appropriate.

For more information about quad bike registration contact the Department of State Growth. Go to www.stategrowth.tas.gov.au or call 1300 135 513.

Selecting a vehicle

Quad bikes are practical for many tasks; however, they have limitations. Small on-road vehicles, two-wheel motorbikes and light utility vehicles may be a better choice for many jobs on farms.

Is a quad bike the best option for your farm?

When purchasing a vehicle, a bit of research goes a long way toward helping you get the one that's best for you. To help you select the right vehicle for your farm:

- identify your needs and relevant operator safety issues
- compare options to your needs
- question dealers and others with relevant knowledge.

Identify your needs and relevant operator safety issues

Before you visit dealer showrooms, make a list of your needs:

- Tasks: What will the quad bike be used for? What do you need it to do?
- Conditions: What are the most common conditions you will be using it in? Rocky or hilly country? Mud? Sand?
- Safety: Which vehicle provides the operator with the greatest level of safety for each task?
- Operator: Who will be operating the vehicle? What training do they have, or require? What size and age are they? Do you (the farmer) have the necessary skills and expertise to train your operator, or would you need to use external trainers?
- Protective equipment: What is required?
- Potential road use: Will there be times when the vehicle is operating on the road?
- Loads: What will be carried and how much will it weigh?
- Towing: Will the vehicle be used to tow trailers or other attachments? If so, what will be the maximum weight and height the vehicle will be required to tow?

Compare vehicle options to your needs

Quad bikes have a light footprint and are an economical single-person vehicle for off-road use. However, a quad bike may not be the most suitable choice when farm work requires more power.

Larger and more powerful quad bikes have become available in recent years. A key safety consideration on larger quad bikes, especially for inexperienced operators, is the aggressiveness of the throttle action when starting off and changing gears while on the move. Therefore larger quad bikes may not be as safe as smaller ones for many tasks (such as droving).

The information in this table may help you select the safest vehicle for jobs on your farm.

Farm vehicle selection options

Task	Risks	Alternatives to consider that may reduce risks
<p>Checking parts of the farm</p> <p>Quad bikes, when used without attachments and on level surfaces are valuable for inspecting and accessing remote parts of the farm.</p>	<p>Rollover</p> <p>Collision</p> <p>Unpredictable surface changes</p>	<ul style="list-style-type: none"> ■ Farm ute, 4WD ■ Two-wheel agricultural motorbike ■ Horse ■ Light utility vehicle (sometimes known as multi-purpose vehicle)
<p>Transporting</p> <p>Quad bikes are often used for transporting the operator and small loads around the farm.</p>	<p>Rollover</p> <p>Collision</p>	<ul style="list-style-type: none"> ■ Farm ute, 4WD ■ Light utility vehicle ■ Small tractors (that also function well in wet conditions) ■ Two-wheel agricultural motorbike
<p>Moving produce on the farm</p> <p>When used within their load and towing capacities, quad bikes are useful for carting boxes of fruit, vegetables, hay and small animals.</p>	<p>Rollover</p> <p>Collision</p> <p>Loss of traction on downhill slopes</p> <p>Overload</p>	<ul style="list-style-type: none"> ■ Light utility vehicle with trailer ■ Farm ute, 4WD ■ Tractor with trailer
<p>Spraying of weeds</p> <p>Quad bikes may have fitted or towable spray tanks.</p>	<p>Unstable load may change centre of gravity and make vehicle less stable</p> <p>Loss of traction on downhill slopes</p> <p>Rollover Collision</p> <p>Overload</p> <p>Chemical exposure</p>	<ul style="list-style-type: none"> ■ Light utility vehicle with fitted or towed tank ■ Farm ute, 4WD ■ Small tractor ■ Knapsack spray
<p>Mustering</p> <p>Quad bikes are useful for mustering and moving sheep and cattle.</p>	<p>Rollover</p> <p>Collision</p> <p>Hidden obstacles</p>	<ul style="list-style-type: none"> ■ Two-wheel agricultural motorbike ■ Farm ute, 4WD ■ Horse ■ Helicopter

Adapted from Farmsafe Australia Inc, Safe operation of All-terrain Vehicles and All-terrain Utilities on Australian Farms – An Industry Strategy 2004–2009

Features to consider

If you've decided that a quad bike is best for your operation, there are still many options and combinations to consider:

- size range from small and lightweight, to large and heavy
- high or low engine capacity size (cc)
- two-wheel drive and/or four-wheel drive
- front and/or rear brakes: some may have linked hand and/or foot brakes
- electric start, kick-start and/or pull-start
- liquid-cooled and/or air-cooled engines
- automatic or hand-operated clutches
- ability to drive in reverse or reverse gear provided
- solid drive axles, differentials
- chain drives, shaft drives
- thumb lever throttles, twisting handgrip throttles
- controls and their locations differ from one quad bike to another.

Loads and attachments

It is also important to consider the load specifications of particular quad bikes and what attachments are available. The manufacturer's specified load limit includes the operator, the load being carried, plus any attachment used. These should be factored into the total weight of any load and will impact upon the safe choice you make about a particular quad bike.

Ask suppliers about the suitability of their range of quad bikes and attachments for the tasks you want to do on your farm. In the final analysis, safety must be the paramount consideration.

Safety systems

Safety systems help you meet your legal work health and safety requirements, and are specific to your farm environment. Some key safety systems include:

- farm quad bike operating rules
- emergency communication systems
- training and supervision.

Farm quad bike operating rules

Farm quad bike operating rules are the basic rules for operating quad bikes on your property. When developing these rules, be guided by the manufacturer's specifications and the safety warnings on the quad bike. At a minimum, farm quad bike operating rules should cover:

- information about the make and model of the quad bike
- who is authorised to operate the quad bike
- what training and induction is required
- information that passengers are not to be carried on quad bikes
- what protective gear must be worn, how to care for it and how to store it
- what the quad bike can and can't be used for
- where the quad bike can be ridden. Are parts of the farm quad bike no-go zones? Are there designated tracks?
- what conditions the quad bike can and can't be used in
- what speed the quad bike is to be ridden on tracks, paddocks and around buildings
- how to safely load and unload the quad bike and how much it can carry
- how the quad bike will be loaded for transport
- how the quad bike will be stored
- what attachments are to be used with the quad bike
- when and how the quad bike is to be maintained or defects fixed
- what communication systems are to be used by operators.

Communication systems

In many quad bike-related fatalities, the victim was not noticed as missing for at least 24 hours, sometimes considerably longer. Some of these lives could have been saved if the victim communicated that they were injured and received help promptly.

As farm workers often work alone, it is important someone else knows their planned movements. If they are late returning, a phone or two-way radio call will keep you informed. If there is no answer, you can arrange for someone to search for the worker.

Developing a communication plan is a good safety strategy. Once established, it will soon become automatic.

Sample communication protocol

If you will be working alone and out and about on a quad bike:

- Identify someone on the farm or close by who agrees to check for your planned return and monitor a phone and/or two-way radio while you are working.
- Leave a note for this person advising them:
 - ▶ what you will be doing
 - ▶ where you will be
 - ▶ when you expect to return.
- Discuss emergency plans with the person:
 - ▶ if you are late, how much leeway until the alarm is raised?
 - ▶ will they come looking or call emergency services first?
- Wear a high visibility vest and/or put a high flag on the quad bike to improve your visibility.
- Carry adequately powered and charged two-way radio and/or mobile phone.

Ways to raise help

- In an emergency, call 000 from fixed or mobile phones.
- Call 112 from GSM mobile phones only. When dialling 112 on GSM mobile phones, access is provided regardless of the presence or validity of a SIM card within the phone or whether the keypad is locked. A signal is still necessary. The call automatically directs to 000.
- Two-way radio, either UHF or CB. UHF channel 5 is established by law for use by anyone, but only in an emergency situation.

Case study

Could communication have helped? A farmer's wife was concerned when her husband didn't arrive home for lunch as arranged. He had taken his quad bike to check the property. Later that day he was found pinned under the rear section of his quad bike, part way down a steep section of an isolated paddock. He was dead.

Training

No operator should use a quad bike for farm work without first receiving training. Training is essential to help reduce the risk of serious injury and death associated with quad bike use. Training and supervision also ensure the farm safety systems are communicated to workers, and that workers follow the systems.

The manufacturer, supplier, an external training provider or you (if you have the necessary skills and expertise) can provide training. Some suppliers provide training options at the time of purchase.

Farm managers must ensure experienced operators and long-term workers receive training when there is a change in vehicle or attachments.

Induction

Farm managers must ensure new workers are inducted before they use equipment. The induction should outline the farm operating rules, and familiarise the worker with the safety instructions in the operator's manual (and where they can find it). Any quad bike no-go zones on the farm should also be explained.

Supervision

Supervision ensures workers operate quad bikes safely. Supervision may need to be more frequent at first to support new and young workers or other workers who are not familiar with quad bikes.

After providing training or an induction, it's a good idea to carry out (and document) a practical skills assessment of each worker who is to operate existing and/or new quad bikes on your farm. This will help you gauge the skills of workers before they operate a quad bike on your farm. It involves the operator demonstrating their knowledge about the quad bike, its operation, your farm rules and showing you their riding skills.

Maintaining records of training and supervision

Keep records of training and induction that is done, noting the names of the trainer and the operator, the date, location of training and the skills assessment results of training. When problems are reported, record the problem and the actions undertaken to remedy it.

The following 'Sample quad bike operator skills assessment' checklist can be adapted for use on your farm.

Sample quad bike operator skills assessment

- Add to or alter this form to suit your quad bike and farm rules.
- Consult your operator's manual for information about minimum maintenance activity.
- Maintain completed forms to provide a record of completed inspection and/or training.
- Additional copies of checklists are available at worksafe.tas.gov.au

Quad bike skills assessment for (operator name):

Test done at (location):

Operation	Operator should:	Demonstrated	
		Yes	No
Pre-start-up	Be dressed in suitable work clothing and footwear for operation.	<input type="checkbox"/>	<input type="checkbox"/>
	Describe the purpose and correct use of machine controls.	<input type="checkbox"/>	<input type="checkbox"/>
	State why passengers are not to be carried on quad bike.	<input type="checkbox"/>	<input type="checkbox"/>
	Know how to do a pre-operational check.	<input type="checkbox"/>	<input type="checkbox"/>
	Check operation and adjustment of brakes.	<input type="checkbox"/>	<input type="checkbox"/>
	Other	<input type="checkbox"/>	<input type="checkbox"/>
Operation	Wear a helmet that complies with AS 1698-2006.	<input type="checkbox"/>	<input type="checkbox"/>
	Wear appropriate PPE and specify different PPE for different farm tasks.	<input type="checkbox"/>	<input type="checkbox"/>
	Follow the manufacturer's starting procedure.	<input type="checkbox"/>	<input type="checkbox"/>
	Ride in forward direction around a defined course – figure-8 around soft obstacles.	<input type="checkbox"/>	<input type="checkbox"/>
	Brake at corner of defined course.	<input type="checkbox"/>	<input type="checkbox"/>
	Demonstrate how to reverse, if appropriate.	<input type="checkbox"/>	<input type="checkbox"/>
	Ride the quad bike, demonstrating control over more difficult terrain such as slope, gully, and channel bank.	<input type="checkbox"/>	<input type="checkbox"/>
	Know about safe loads and attachments and where to get this information for each quad bike on the farm.	<input type="checkbox"/>	<input type="checkbox"/>
	Know about farm safety rules, including speed limits and quad bike no-go zones.	<input type="checkbox"/>	<input type="checkbox"/>
	Know what jobs the quad bike is to be used for (and what it should not be used for.)	<input type="checkbox"/>	<input type="checkbox"/>
	Know how to safely load, transport, unload and store a quad bike.	<input type="checkbox"/>	<input type="checkbox"/>
	Other	<input type="checkbox"/>	<input type="checkbox"/>

Date of assessment:.....

Person conducting assessment:.....

For quad bike number:.....

Adapted from Farmsafe Australia Inc, 2006, Safety of All-terrain Vehicles (Quad bikes) and other small Utility Vehicles on Australian Farms, A practical management handbook, Australian Centre for Agricultural Health and Safety.

Using your quad bike

For many farmers, it is second nature to use a quad bike, but many injuries and fatalities happen on farms from using quad bikes inappropriately. The following information provides useful advice for operating your quad bike safely.

Operators

The operator must be able to safely operate the quad bike. Some aspects to consider when matching a quad bike to an operator include:

- size of operator: Large or heavy framed people require a larger quad bike, smaller people require a smaller one. Match the quad bike to the size of the person
- operator competence: Some quad bikes are more difficult to operate than others based on their speed, agility and other performance characteristics. Ensure the operator has the skill and experience to operate the quad bike safely
- operator age: People under the age of 16 using adult-sized quad bikes is not recommended by manufacturers.

Challenging terrain

Operators must take precautions while riding on challenging terrain. When riding in sand and mud, specific riding skills are required, particularly to maintain vehicle momentum and stability. Other factors that can affect quad bike operation are seasonal conditions like frost, snow or flooding. Recommended precautions include:

- ride on familiar tracks and be aware of obstacles in your path (like drains or rough surfaces)
- assess the terrain before you choose to ride over it. If you are not confident about riding over a particular patch of terrain, go another way, or turnaround and use a more appropriate vehicle to complete your task
- watch the ground ahead for potential hazards such as tree stumps, rabbit burrows, rocks or branches, especially in long grass
- terrain can change in wet weather and require different skills and greater vigilance to operate a quad bike
- quad bikes may become unstable where the terrain is rocky, rough or steep because the centre of gravity can shift quickly and dramatically in these conditions
- be aware that liquid loads can cause sudden shifts to your quad bikes centre of gravity when riding over uneven terrain
- remember that steep slopes put you at risk of rollover. The steeper the slope the higher the risk of rollover
- keep speed down on slopes and in long grass
- select low ratio gear when going up or coming down a slope. This also allows for engine braking to control speed when coming down hills
- it is safer to ride up or down slopes rather than across them
- when operating on slopes, operators must be trained in active riding techniques so that they know when to change their riding position to safely cross slopes and make turns.

Case study

Choose your riding path carefully. A young man, who had owned his quad bike for two weeks, was carrying a passenger when he hit a low-lying outcrop of rock. Both the rider and passenger were thrown off the quad bike and the rider died from multiple injuries.

Attachments, loads and towing

Carrying loads on the front and/or rear racks of quad bikes is convenient, but can be risky because the extra weight can affect braking, alter the centre of gravity and make the quad bike difficult to control.

Manufacturers specify load and towing limits in the operator's manual and on the quad bike itself. These limits should not be exceeded. Manufacturer's load and towing limitations include:

- weight of the load
- location of the load
- attachment weight
- operator weight.

If an after-market attachment is used, the combined total weight should not exceed the manufacturer's weight or towing specifications.

Some farms may use more than one type of quad bike and the weight specifications may be different for each of them. Where necessary, check with your supplier.

Never operate an overloaded quad bike. Never overload trailers.

Case study

A farmer was spraying using a quad bike fitted with a spray tank. The terrain was very steep and uneven. When he did not return by nightfall, a search was done and he was found with the quad bike on its side, across his head and chest. He could not be revived.

Tips for loads and towing with your quad bike

- Decide if there is a better alternative than your quad bike for towing.
- Always obey the manufacturer's load limitations and recommendations.
- Keep the load low. High loads raise the centre of gravity and should be avoided.
- Reduce speed and allow longer braking distance when carrying a load. The brakes on a quad bike are designed to operate effectively within the limits specified, over relatively smooth and level terrain. Use low gear. The more weight you carry, the slower you should go.
- Avoid hills and rough terrain. The weight of cargo carried should be reduced in rough terrain or as the slope increases. If operating on steep slopes, little or no load should be carried. Speed of operation should also be modified.
- Secure loads to racks with straps provided.
- Connect to the towing point of the quad bike only.
- Operate only with stable and safe loads.
- Do not travel faster than the speed recommended in the operator's manual or in your farm rules.

Liquid loads and tanks

Liquid loads, either carried on the quad bike or towed, are unstable because the contents can shift when cornering or traversing slopes. This decreases quad bike stability and increases the likelihood of rollover. Tanks fitted with baffles are a better option, but they do not completely reduce the risks associated with liquid loads.

When carrying liquid loads, include the weight of the contents of the tank in your load calculations. One litre of water weighs one kilogram.

At a minimum, tanks for liquids should:

- have internal baffles that restrict the movement of liquid as the tank is moved
- have smooth external surfaces with no sharp edges and be as low as possible to keep the centre of gravity low
- allow the operator to move freely when operating the quad bike without obscuring their vision or interfering with operator controls
- not touch the operator or restrict their ability to separate from the machine in the event of a rollover
- be properly sealed to avoid splashing chemicals onto the machine, the operator or surroundings
- must not exceed the manufacturer's load limits for each quad bike.

Multi-tasking

Where a quad bike operator performs a task (such as spraying or mustering) while operating a quad bike, their skill level needs to be higher than that required for simple riding. Multi-tasking increases risk because the operator may focus on the task rather than operating the quad bike.

Mustering provides a good example of this. Quad bike operators focus on the livestock rather than the ground they are riding over and may not be aware of unexpected surface changes or obstacles.

To increase your safety when mustering or performing other multi-tasking activities, maintain slow speed and seek a path over the terrain that provides the best visibility of any potential obstruction or hazard.

Case study

A 38 year old man was killed when mustering cattle on a quad bike. While pursuing an animal, he came off the quad bike and landed awkwardly. He was not wearing a helmet.

Wear the right PPE for the task

Quad bike operators should wear appropriate personal protective equipment (PPE) when operating a quad bike.

Case study

A 21 year old man was killed while accelerating up a steep embankment. The front wheels of his quad bike left the ground, causing it to roll over onto him. He was not wearing a helmet.

PPE Information

PPE	Guidance
Helmet	<ul style="list-style-type: none"> A helmet is the most important piece of protective equipment and should be worn at all times the vehicle is being ridden. – Select a helmet that complies with Australian Standard 1698:2006 Protective helmets for vehicle users. These helmets meet the requirements for on-road and off-road use. – Ensure the helmet fits the operator snugly, is securely fastened and provides good, all-round visibility. A poorly-fitting or loose helmet can become dislodged in an incident and then offer no protection at all. – Operators should not share helmets but instead use personal helmets for size and hygiene reasons.
Eye protection	<ul style="list-style-type: none"> Eye protection is recommended to prevent eye injuries and prevent branches, bugs, dust or sand hitting your face and distracting you. Sunglasses are unlikely to provide adequate physical protection. Suitable types of eye protection include: – helmets fitted with visors (check visibility of tinted visors in low light conditions), or – a pair of riding goggles. If goggles are worn, ensure they are good safety goggles, are well-ventilated, and able to be securely fastened.
Gloves	<ul style="list-style-type: none"> Gloves are recommended to provide protection from abrasions and help to keep your hands from getting sore, tired or cold. Note that rigger's gloves may become slippery when wet and are not advisable for use with quad bikes.
Footwear	<ul style="list-style-type: none"> Sturdy footwear is recommended (preferably boots that come up past your ankle with strong uppers for gear changes.) Heels will prevent your feet from slipping off the foot decks.
Clothing	<ul style="list-style-type: none"> Arms and legs should be covered to reduce abrasions to the body, even in hot weather. Trousers should be close-fitting and in good condition.
Hearing protection	<ul style="list-style-type: none"> If the vehicle operation is rated above 85 decibels, hearing protection such as earplugs should be used.
UV protection	<ul style="list-style-type: none"> UV protection is recommended as helmets may not protect your face or back of neck from UV rays. UV protection includes: – sun block (be guided by the Cancer Council recommendations).
PPE for chemical application	<ul style="list-style-type: none"> Employers must ensure employees follow the chemical manufacturer's directions when working with chemicals. Refer to the relevant chemical material safety data sheet (MSDS) and product label for the correct type of PPE required. If the recommended PPE interferes with the operator's helmet or the operation of the quad bike, then an alternative vehicle should be used. Equip the quad bike with a first aid kit and ensure items recommended in the MSDS are included.
High-visibility vest	<ul style="list-style-type: none"> High-visibility vests are recommended for use, particularly when quad bikes are driven on roads.

Case study

Three people on a quad bike were not wearing helmets when the quad bike crashed into a fence post and overturned. The two adults were thrown clear but the quad bike overturned onto the child passenger. The quad bike had two safety decals displaying warnings about wearing helmets and never carrying passengers.

Quad bike safety essentials

While it's essential to plan for safety, it's equally important to operate the quad bike according to the plan. The best farm quad bike safety plan is only as safe as the operator driving the quad bike. At a minimum, operators must:

- wear a helmet that meets Australian Standard 1698:2006 - Protective helmets for vehicle users
- wear the appropriate PPE
- do pre-operation checks
- only operate equipment that is correctly maintained
- operate the quad bike in accordance with the operator's manual and farm operating rules
- work in pairs where possible.

Transporting and storing your quad bike

Loading and unloading quad bikes for transport

- Read the operator's manual to identify the maximum safe slope for loading. Ramps will need to be longer the higher the tray on the transport vehicle.
- Select a suitable site to load and unload the quad bike. Use a loading bank or platform whenever possible.
- Box-type trailers may be lower than other options and therefore safer to use.
- Remove loads from the quad bike. Empty spray tanks before loading.
- If using ramps, centre the quad bike over the ramps. Select 4WD if available.
- Check ramp carrying capacity. The weight should be marked on each ramp. For example, if the safe working load (SWL) for each ramp is 175kg, that's a total load capacity of 350kg.
- Once loaded, position the quad bike in the centre of the trailer.
- Put the park brake on.
- Secure the quad bike front and back with straps and harnesses in good condition.
- Use crossover ties if you are travelling a long distance or over uneven terrain.
- Secure other objects so the quad bike is not damaged by shifting loads.

For unloading, follow the steps above, but in reverse.

Storing a quad bike

- Securely store under cover if possible.
- Before putting the quad bike away, report any maintenance issues so they can be attended to before it is next used. Consider disabling the quad bike until repairs are completed.
- Securely store any associated quad bike equipment (such as spray tanks).
- Refer to the operator's manual if the quad bike is to be stored for a long period.
- Remove keys to prevent unauthorised use.

Maintaining your quad bike

A properly maintained quad bike is a safer vehicle. Regular, careful pre-operation checks and routine maintenance will keep your quad bike in reliable working condition. If you are uncertain about carrying out a maintenance task correctly, take it to a suitably qualified repairer.

Case study

A 56 year old farmer and a small child were killed when a quad bike reversed and crushed them between the quad bike and a trailer. An inspection of the quad bike by a qualified technician showed that it was in a chronic state of disrepair. Only 10% of the brake shoe material remained. The quad bike was judged incapable of stopping within the required distance, even at 8kph.

Like many quad bikes, this quad bike had a safety lockout that prevents the engine being started in gear unless the footbrake is engaged, but the reverse lock release cable was so rusted it had seized.

Pre-operation checks

Ensure your quad bike is in proper working order before using it, to reduce the risk of suffering an injury or damaging the quad bike. It is particularly important to do a pre-operational check if you are not the person who last used the quad bike or if you have not used it for some time. This also helps avoid the possibility of getting stranded because of breakdown or lack of fuel.

The operator's manual lists specific items to be checked before a quad bike is started up for work and is the starting point for safe operation of a quad bike. Always follow the procedures and specifications laid out in the manual.

The following sample pre-operation checklist can be adapted for use on your farm. It is also available at worksafe.tas.gov.au

Case study

A farmer was checking the fuel level of his quad bike while it was in motion when he lost control of the quad bike and it rolled. He was found dead an hour later with the bike on his chest. He was not wearing a helmet, despite one being available.

Sample pre-operation checklist

- Add to or alter this form to suit your quad bike and farm rules.
- Keep copies in a sturdy folder where keys are stored
- Consult your operator's manual for information about minimum maintenance activity.
- Maintain completed forms to provide a record of completed inspection and/or training.
- Additional copies of checklists are available at worksafe.tas.gov.au

Pre-operation checklist	For quad bike number:
<input type="checkbox"/> Check the fuel, oil and coolant every time before use with the engine off.	
Visually inspect	
<input type="checkbox"/> Check for damaged or loose parts. <input type="checkbox"/> Check for fuel or oil leaks.	
Wheels and Tyres	
<input type="checkbox"/> Check tyres for damage. <input type="checkbox"/> Ensure tyre pressure is correct and even in each tyre.	
<input type="checkbox"/> Check wheel nuts.	
Throttle	
<input type="checkbox"/> Check the throttle operates smoothly across its range. Accumulated mud and dirt can restrict cable movement and prevent the throttle from closing.	
Brakes	
<input type="checkbox"/> Check brakes operate properly before reaching full speed.	
Air filter	
<input type="checkbox"/> Check it is not choked with dirt. Clean and replace regularly.	
Lights and switches	
<input type="checkbox"/> Check lights and switches work.	
Drive chain and chassis	
<input type="checkbox"/> Inspect chain for proper adjustment, wear and lubrication.	
<input type="checkbox"/> Check drive shaft for oil leakage.	
<input type="checkbox"/> Look and feel for loose parts with the engine off. Rough terrain will loosen chassis parts.	
Steering	
<input type="checkbox"/> Check the steering moves freely, but without undue looseness.	
Other checks required	
Maintenance actions required	
For safe operation, any defects identified in a check of the quad bike must be fixed before it is put into operation. This may mean you need a suitably qualified repairer.	
<input type="checkbox"/> Done	
Checked by:.....	Date

Routine maintenance

Routine maintenance involves:

- cleaning
- inspecting
- lubricating
- adjusting
- replacing parts.

A toolkit is provided at the time of purchase and is usually stored under the seat or in a compartment on the quad bike.

Maintenance tips

- Maintain your quad bike according to the maintenance schedule in the operator's manual at a minimum. Quad bike manufacturers recommend how and when routine maintenance should be conducted. The frequency of routine maintenance of your quad bike should take account of the environment the quad bike operates in.
- Ensure a competent person carries out any maintenance tasks and a suitably qualified repairer carries out repairs.
- After any significant incident, have a suitably qualified service person check the quad bike and list all defects.
- Wash the quad bike routinely to remove mud, manure, debris or chemical residue build up that can cause corrosion and affect operation and/or prevent controls from functioning.
- Any modifications must be within the manufacturer's specifications. Changing the type of tyres or puncture-proofing tyres may adversely affect the quad bike's performance. Refer to your operator's manual and/or speak to your supplier for more details.

Sample routine maintenance checklist

- The frequency of routine maintenance of your quad bike should take account of the environment in which the quad bike operates.
- Add to or alter this form to suit your quad bike and farm rules.
- Consult your operator's manual for information about minimum maintenance activity.
- Maintain completed forms to provide a record of completed inspection and/or training.
- Additional copies of checklists are available at worksafe.tas.gov.au

Sample routine maintenance checklist	
Quad bike number:.....	Odometer/hours reading:.....
Brakes <ul style="list-style-type: none"> <input type="checkbox"/> Check adjustment, pads, cables and fluid levels <input type="checkbox"/> Auxiliary brake <input type="checkbox"/> Foot and hand levers adjusted according to operator's manual <input type="checkbox"/> Check disc wear 	Wheels <ul style="list-style-type: none"> <input type="checkbox"/> Axle bearings and wheel nuts are tight <input type="checkbox"/> Rims not dented or buckled <input type="checkbox"/> Tyres are roadworthy, with adequate tread depth <input type="checkbox"/> Tyre type and pressure as per the operator's manual <input type="checkbox"/> Use low-pressure tyre gauge. High-pressure gauges are not accurate for quad bike tyres
Chassis and suspension <ul style="list-style-type: none"> <input type="checkbox"/> Shock absorbers – for leaks and wear <input type="checkbox"/> Suspension operation <input type="checkbox"/> Safety guards – for looseness <input type="checkbox"/> Handlebars, foot decks and major fasteners – use tension wrench 	Steering <ul style="list-style-type: none"> <input type="checkbox"/> Smooth movement from lock to lock <input type="checkbox"/> Linkages – for wear
Throttle operation <ul style="list-style-type: none"> <input type="checkbox"/> Test while moving handlebars fully to the left and fully to the right 	Gear selectors <ul style="list-style-type: none"> <input type="checkbox"/> Gear levers – for damage and excessive slack <input type="checkbox"/> Splines on gear shaft
Fluid levels <ul style="list-style-type: none"> <input type="checkbox"/> Fluid levels as recommended in the operator's manual <input type="checkbox"/> Transmission fluid <input type="checkbox"/> Engine oil <input type="checkbox"/> Battery fluid <input type="checkbox"/> Brake fluid <input type="checkbox"/> Fuel tank 	Cooling systems <ul style="list-style-type: none"> <input type="checkbox"/> Fluid levels (if liquid cooled) <input type="checkbox"/> Thermostatic fan <input type="checkbox"/> Leaks and damage
4WD system <ul style="list-style-type: none"> <input type="checkbox"/> Constant velocity joints <input type="checkbox"/> Drive line and shafts <input type="checkbox"/> Check for split boots on drive shafts 	Air filter <ul style="list-style-type: none"> <input type="checkbox"/> Check, clean and regularly replace

Sample routine maintenance checklist	
Signals <input type="checkbox"/> Lights <input type="checkbox"/> Horn <input type="checkbox"/> Indicators	Exhaust <input type="checkbox"/> Holes and corrosion <input type="checkbox"/> Excessive noise <input type="checkbox"/> Looseness <input type="checkbox"/> Spark arrestor fitted
For quad bikes with chain drive <input type="checkbox"/> Chain adjustment as per the operator's manual <input type="checkbox"/> Sprockets not worn	Battery <input type="checkbox"/> Battery terminals – for corrosion and tightness <input type="checkbox"/> Electrolyte levels <input type="checkbox"/> Damaged casing
Lever controls <input type="checkbox"/> Check smoothness of operation <input type="checkbox"/> Check for broken, sharp or bent levers	Other Check for attachment and condition of: <input type="checkbox"/> Load carriers <input type="checkbox"/> Foot decks <input type="checkbox"/> Seat
Additional routine maintenance checks required for your quad bike:	
1. Maintenance actions required	
2. Items that require attention from an authorised repair person	
Maintenance check performed by:..... Date:.....	
Next service at:	

Quad bike operation checklist

This checklist is a simple summary of the safety features discussed in this handbook.

If you can tick the 'Yes' column for the items listed you are well on the way to productive use of quad bikes on your farm. If you tick 'No' you need to address those issues.

Item	Yes	No	Notes
Vehicle choice			
<ul style="list-style-type: none"> ■ Has the best vehicle for the task and conditions been selected? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Is the quad bike the safest vehicle for the job? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Is the quad bike matched to the operator? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Are any special permits and conditions relating to quad bike use complied with (eg registration for on-road use)? 	<input type="checkbox"/>	<input type="checkbox"/>	
The operator			
<ul style="list-style-type: none"> ■ Farm induction completed? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Quad bike operators are trained and competent? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Are records of training kept? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Are only authorised operators permitted to use quad bikes on your farm? 	<input type="checkbox"/>	<input type="checkbox"/>	
List their names:			
Farm			
<ul style="list-style-type: none"> ■ Are safe work practices relating to quad bike operation established and communicated (ie farm operating rules)? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Do workers know the farm operating rules and are records kept? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Are farm jobs for which the quad bike can be used (and not used) specified? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Are speed limits set for the farm? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Do operators know about no-go zones for quad bikes on the farm? 	<input type="checkbox"/>	<input type="checkbox"/>	
Maintenance			
<ul style="list-style-type: none"> ■ Are quad bikes kept in safe condition? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Quad bike has start-up check before use every time? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Quad bike has routine maintenance? 	<input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> ■ Are faults reported and fixed as they occur? 	<input type="checkbox"/>	<input type="checkbox"/>	

Item	Yes	No	Notes
Personal Protective Equipment			
<ul style="list-style-type: none"> ■ Does each operator have their own helmet that conforms to Australian Standards? ■ Does each operator wear their helmet and fasten their chinstrap? ■ Does each operator wear eye protection, sturdy boots, gloves, long sleeves and trousers? ■ Is other PPE required for specified jobs (eg spraying) available and worn? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Attachments, loads and towing			
<ul style="list-style-type: none"> ■ Do fitted attachments comply with weight and towing specifications set by the manufacturer? ■ Are manufacturers' recommendations followed when using an attachment? ■ Do workers know what attachments to use and when? ■ Are tanks for carrying liquid loads fitted with baffles (eg spray tanks)? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Transporting quad bikes			
<ul style="list-style-type: none"> ■ Do workers know how to safely load, unload, tie down and transport the quad bike? 	<input type="checkbox"/>	<input type="checkbox"/>	
Communication			
<ul style="list-style-type: none"> ■ Does your farm have an established communication plan and is it followed? 	<input type="checkbox"/>	<input type="checkbox"/>	
Additional safety			
<ul style="list-style-type: none"> ■ Passengers are not permitted on quad bikes. ■ Children are not allowed to operate adult quad bikes. ■ Are safety warnings on quad bikes obeyed? ■ Is an appropriate first aid kit carried and maintained? ■ Is unauthorised use of the quad bike controlled by the removal of keys? 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Additional requirements for farm:			

Further information

- Farmsafe Australia has practical information on its website. Go to www.farmsafe.org.au and search for 'quad safety'.
- Safe Work Australia's Quadwatch monitors quad bike fatalities in Australia and provides useful links to practical quad bike safety information. Go to www.safeworkaustralia and search for 'quadwatch'.
- National Transport Commission's Load Restraint Guide has practical guidance for safely carrying loads. Go to www.ntc.gov.au and search for 'load restraint guide'.
- You can find copies of all the sample checklists that appear in this handbook at www.worksafe.tas.gov.au

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