

IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: 2186/2007

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)

Section 67 of the Coroners Act 2008

I, JANE HENDTLASS, Coroner having investigated the death of JILL FIELDING

without holding an inquest:

find that the identity of the deceased was JILL FIELDING

born on 28 May 1948

and the death occurred on 10 June 2007

at the Alfred Hospital, Commercial Road, Prahran, 3181, Victoria

from:

1 (a) HEAD INJURY

Pursuant to section 67(2) of the **Coroners Act 2008**, I make findings with respect to the following circumstances:

1. Jill Fielding was 59 years old when she died. She lived with her husband, Paul Fielding, at 90 Ford Road in North Harcourt. Mrs Fielding worked full-time as a factory worker at Castle Bacon in Castlemaine. She also assisted Mr Fielding on their vineyard and small farm.
2. In December 2004, Mr Fielding bought a new Kubota M6800 tractor ("the tractor")¹ from Andrew Grogan at Grogans Machinery in Epsom.
3. The tractor had a mass of 1650kg and was 2.45 metres high including the two post rollover protection at the rear of the driver's seat.

¹ Kubota Corporation no longer manufactures or sells the Kubota M6800 model tractor in Australia.

4. The tractor also had the capacity for optional addition of a front end loader operated through an auxiliary hydraulic system. The pump capacity of the hydraulic system was 41.6 litres per minute with a maximum lifting force of 2050 kg at the lifting point.²
5. Mr Grogan arranged for Kerfab Industries in Kerang to fit the tractor with a Kerfab Model RL57 front end loader (“the front end loader”) before he delivered the tractor to Mr Fielding.
6. Kerfab Industries has determined that the maximum lift height for the front end loader was 3.380 metres. The safe working load was 1070 kg.³
7. On 5 February 2005, Mr Grogan delivered the tractor fitted with the front end loader to Mr Fielding. At the same time, he demonstrated safe use of the tractor including the correct method for hooking up implements and attachments, driver safety and the safe operation of the front end loader.
8. Mr Grogan also provided Mr Fielding with a copy of the operator manuals for both the tractor⁴ and the front end loader.⁵

Circumstances of the fatal incident

9. On the morning of 10 June 2007, Mr Fielding was using the front end loader on the tractor to unload a steel gantry (“the gantry”) from a tandem trailer attached to his utility.
10. The gantry was constructed of heavy gauge angle iron on an A-frame support legs with a large “I” beam spanning between the legs. I do not know how heavy it was.
11. Mr Fielding had used the tractor and the front end loader several times in the two years since it had been delivered. He had fitted the front end loader with forks to assist in supporting the gantry.
12. Mrs Fielding had limited experience in using the tractor and no experience using the hydraulics that operated the front end loader. She was helping Mr Fielding by driving the utility.

² Kubota Corporation, “Operator’s Manual: Kubota Tractor Models M4700-M5400-M6800-M8200-M9000”, p. 11.

³ KerFab Industries, “Front End Loaders, Standard Features” now replaced by KerFab Industries, Product Catalogue. These specifications have not changed.

⁴ Kubota Corporation, “Operator’s Manual: Kubota Tractor Models M4700-M5400-M6800-M8200-M9000.

⁵ KerFab Industries, “Operation Manual” now replaced by “Kerfab Industries, “Plant Risk Assessment & Operators Manual Front End Loader, April 2010.

13. Mr Fielding lifted the gantry off the tandem trailer to about 250cm off the trailer (500cm off the ground) with the forks of the front end loader. He did not secure the gantry to the forklift.
14. When Mr Fielding had lifted the gantry off the tandem trailer, Mrs Fielding drove the utility forward to move the trailer away from under the gantry that was now supported about 500cm above the ground by the forks of the front end loader.
15. The gantry was swaying and became difficult to manage while it was on the forks of the front end loader and unsupported by the trailer. Mr Fielding asked Mrs Fielding to help him by guiding the gantry so that he could lower it to the ground. However, Mrs Fielding said she would prefer to operate the hydraulic lever to lower the front end loader while Mr Fielding held the gantry steady.
16. Accordingly, Mr Fielding and Mrs Fielding changed places so that Mr Fielding was guiding the gantry and Mrs Fielding was sitting in the cabin of the tractor and operating the fork lift loaded with the unsecured gantry.
17. The lever on the tractor that controls the fork lift worked in the opposite direction to the direction the fork lift moved. Further, the hydraulics on the fork lift responded very quickly when Mrs Fielding activated the lever.
18. Mrs Fielding had no training in using the front end loader and Mr Fielding did not show her which way to operate the lever to lower the fork lift.
19. The evidence before me is contradictory about whether there were any labels on the controls to indicate how to operate the front end loader:
20. On one hand, the Chief Executive Officer of Kerfab Industries, Keith Chirnside, stated that:

“The labelling and signage attached to the controls of the loader are as per attachment 2, 3 and 4 [of his statement].

“Attachment 2 is applied to the right hand main post of the loader, just to the right of the controller (joystick) to be in the clear view of the operator.”
21. Attachment 2 to Mr Chirnside’s statement refers to ‘LOADER CONTROLS’ and pictorially represents that to lower the forks of the loader, the lever must be pushed upwards and that, conversely, pushing down raises the forks.

22. On the other hand, Mr Fielding indicated that the lever for the loader operation of the tractor was not labelled and had never been.
23. Further, Senior Constable Malcolm Crane supported Mr Fielding's memory at the time of the incident:

"On closer inspection of the controls of the tractor I observed that all the levers on the tractor had labels to indicate their operation, except for the lever to operate the forklift. That lever simply had a black rubber boot at the base with no words, symbols or pictures indicating what its operation was."
24. Similarly, Mr Grogan noted that:

"The Kerfab loader that was fitted had no labels on the controls of the loader."
25. According, I find that the lever to operate the front end loader was probably not labelled when the tractor was delivered to Mr Fielding in 2005 and was certainly not labelled on 10 June 2007.
26. Mrs Fielding had not operated the front end loader before. Further, there is no evidence before me to suggest that she had read the Kerfab Industries Front End Loaders Operation Manual or had been instructed in use of the front end loader.
27. Therefore, in the absence of any information about how to operate the lever to activate the front end loader, Mrs Fielding pushed the lever backwards so that the front end loader supporting the unsecured gantry quickly rose to a height that was about four metres above the ground.
28. From this elevated position, the unsecured gantry twisted, slipped over the forks, down the hydraulic arm of the fork lift through the fibreglass roof of the tractor and on to Mrs Fielding's head. The gantry and roof of the tractor trapped her in the cabin.
29. Mr Fielding ran to his neighbour's house and contacted emergency services.
30. At 11:18am on 10 June 2007, a Rural Ambulance Victoria paramedic, Brendan Ryan, arrived at the scene with a student paramedic, Brett Adie. Mrs Fielding was still conscious and responding to questions.
31. At 12:10pm, Country Fire Authority and the State Emergency Services extracted Mrs Fielding from the cabin of the tractor.

32. Mrs Fielding was transferred to The Alfred Trauma Centre by helicopter.
33. She underwent neurosurgery (right craniectomy and evacuation of right subdural haematoma and partial temporal lobectomy and drainage).
34. However, at 4.25pm on 10 June 2007, Jill Fielding died.
35. The forensic pathologist who performed the autopsy formed the opinion that the cause of death was head injury.
36. Accordingly, I find that Jill Fielding died from head injury sustained in a tractor incident.

COMMENTS

Pursuant to section 67(3) of the **Coroners Act 2008**, I make the following comment(s) connected with the death:

1. Jill Fielding was 59 years old when she died. She lived with her husband, Paul Fielding in North Harcourt. She died from head injury sustained in a tractor incident.

2. It is well known that:

“Tractors are, by far, the most dangerous piece of equipment on Australian farms. About 20 people are killed on Australian farms each year while using tractors – more than the number killed by farm utilities, motorbikes and quad bikes combined. Many more people are injured. This can happen on any size of farm and to anyone regardless of age or type of tractor.”⁶

3. On 10 June 2007, Mrs Fielding was helping Mr Fielding to move a gantry from a trailer on to the ground.
4. The gantry was constructed of heavy gauge iron on A-frame support legs and a large “P” beam, spanning between the legs. It is used for lifting engines from cars.
5. However, Mrs Fielding had no experience operating the front end loader on the tractor. Mr Fielding stated:

“Jill wasn’t very experienced in using the tractor and had only used it a couple of times, maybe a dozen or so. She wouldn’t have realised to lower it she needed to press the lever up.”

⁶ WorkSafe Western Australia, “Safe use of tractors with attachments” June 2009.

6. Any machine, including a tractor, is dangerous if used by someone not properly trained or experienced.⁷ Farm accidents and injuries resulting from inexperience or unsafe operation are well documented in the safety literature.⁸
7. Mr Fielding used a Kerfab Model RL57 front end loader (“the front end loader”) fitted to a Kubota M6800 tractor (“the tractor”) to lift the gantry off the trailer. He did not secure the gantry to the fork lift on the front end loader. Mrs Fielding then moved the trailer out from under the gantry.
8. When the unsecured gantry was about 500cm from the ground on the fork lift of the front end loader, Mrs Fielding took over the task of lowering the front end loader while Mr Fielding intended to guide the gantry to the ground.
9. However, Mrs Fielding incorrectly operated the control lever on the front end loader so that it lifted the unsecured gantry rapidly to a height about four metres above the ground.
10. Mrs Fielding’s fatal injuries occurred because the unsecured and rapidly rising gantry became unstable and fell from a height of about four metres off the front end loader through the fibre glass roof of the cabin of the tractor where she was working and crushed her.
11. I find that the gantry fell from an unintended elevated position because Mrs Fielding incorrectly operated the controls of the fork lift so that they lifted the gantry rapidly to a height of about four metres.
12. In the course of my investigation, I identified a number of factors that contributed to Mrs Fielding’s death. These included:
 - The operation mechanism for changing the height of the fork lift;
 - The importance of training and experience in the safe operation of farm machinery; and
 - The appropriateness of the loader for the task undertaken.
13. I will now discuss each of these issues and make recommendations intended to prevent other people dying for the reasons that Jill Fielding died.

⁷ WorkSafe Western Australia, “Safe use of tractors with attachments” June 2009.

⁸ See for example, Cornell University Farm Management Team, “Farm Equipment Training & Operation Policy”, 1999.

The operation mechanism for changing the height of the fork lift

14. Mrs Fielding attempted to lower the front end loader 500cm to the ground by pushing the appropriate lever in the tractor backwards. This action operated to rapidly raise the fork lift on the front end loader and dislodge the already unstable gantry.
15. The hydraulic system in the tractor responded quickly to changes in the position of the operating lever so that the front end loader rose too fast for Mrs Fielding to respond before the fork lift has risen about four metres above the ground.
16. In this context, the unsecured gantry became unstable and fell backwards on to the fibreglass canopy of the tractor cabin.
17. The Tractor & Machinery Association of Australia Industry Code of Practice ('TMA Industry Code')⁹ recognises this action as 'rollback'. They explain:

"In a simple FEL ('front end loader') design the bucket or lifting attachment pivots about an axis on the loader arms and is rated to the desired crowd angle by means of hydraulic cylinders. Once positioned, the crowd angle of the bucket of lifting attachment, relevant to the ground line, increases progressively as the loader arms are raised. The possibility of the object or material being carried by the FEL rolling back out of the bucket of lifting attachment as the loader is elevated presents one of the most serious risks to a front end loader."
18. Further, the TMA Industry Code of Practice advocates eliminating or minimising the risk of rollback of a load using one or more rollback prevention systems.¹⁰ In circumstances where there is no available specialised lifting equipment designed for the load, these options include:
 - the lever lift system;
 - a rollback guard; and/or
 - a lift height limiting device.
19. There was no specific rollback guard or lift height limiting device on the tractor or the front end loader operated by Mrs Fielding.
20. Therefore, Kubota Corporation and Kerfab Industries have relied on the lever lift system in the tractor to prevent rollback.

⁹ Tractor & Machinery Association of Australia, "Industry Code of Practice for Manufacturer of Front-End Loaders for Use on Agricultural Tractors", 2003 edition.

¹⁰ Tractor & Machinery Association of Australia, "Industry Code of Practice for Manufacturer of Front-End Loaders for Use on Agricultural Tractors", 2003 edition.

21. Kerfab Industries documentation¹¹ states that the front end loader was designed and built to comply with Australian Standard AS1418¹² and the TMA Industry Code of Practice.¹³
22. However, compliance with these standards did not prevent a rollback of the gantry from the raised front end loader occurring and Mrs Fielding's death. The question is "*Why not?*"
23. Further, as specified in the TMA Industry Code of Practice, the hydraulic mechanism which operated the front end loader on the tractor worked in the opposite direction to the operating lever so that the fork lift raised its load when the lever was pushed backwards.
24. This hydraulic response system prescribed for front end loaders operates in a way that is counter-intuitive to an untrained and inexperienced user.
25. Accordingly, the TMA Industry Code specifies:

"It is essential that information is provided with every front end loader to ensure that operators are made aware of any safety risks associated with its use, the safety features that are incorporated in the machine, the limitations of its use, and the manner in which it should be operated to ensure safety to the operator and bystanders.."

26. In the circumstances of Mrs Fielding's operation of the lever lift system on 10 June 2007, this Code of Practice was insufficient to prevent its misuse by an untrained and inexperienced user.
27. The TMA Industry Code also specifies:

"The information should be provided by two means; warning or information decals and markings fixed to the FEL (front end loader)."

28. Further, the tractor and its attachments, including the loader, were prescribed equipment pursuant to regulation 104(2)(b) and 105 of the Equipment (Public Safety) (General) Regulations 1995.¹⁴
29. Regulation 306 of the Equipment (Public Safety) (General) Regulations 1995 also specified:

¹¹ Kerfab Industries, 'Agricultural Materials Handling Products: Front End Loaders'.

¹² Standards Association of Australia, "Australian Standard AS1418.1-2002, Cranes hoists and winches-General requirements", 20 June 2002.

¹³ Tractor & Machinery Association of Australia, "Industry Code of Practice for Manufacturer of Font-End Loaders for Use on Agricultural Tractors", 2003 edition.

¹⁴ S.R. No. 82/1995.

“Designer's duties to control risk in relation to operator's controls, emergency stops and warning devices

(1) A designer of prescribed equipment must ensure that the design provides for any operator's controls for the prescribed equipment to be—

(a) suitably identified on prescribed equipment so as to indicate their nature and function;...¹⁵

30. Accordingly, failure to label or identify the front end loader controls breached the Equipment (Public Safety) (General) Regulations 1995.
31. In the absence of other training, adequate labelling of controls may have served as an important prevention mechanism, by prompting Mrs Fielding to reconsider her initial and understandable instinct to push the lever down in an attempt to lower the forks.
32. However, since the date of Mrs Fielding's death, a number of steps have been taken to reduce the probability of this situation re-occurring.
33. For example, the New South Wales Government and WorkCover New South Wales have developed a safety standards guide for front end loaders on tractors (“the Workcover guide”).¹⁶ This Workcover guide has been endorsed by the WorkCover authorities in five states including WorkSafe Victoria.
34. The Workcover guide states:

“All controls for the [front end loader] and its attachments must be clearly and permanently identified. [...] Controls should not result in any movement that is counter intuitive to the direction of control movement.”

35. Similarly, since the death of Mrs Fielding, the practice of labelling controls on tractors supplied by Grogans Machinery has been strengthened:

“We have introduced own in-house hazard and risk assessment program, through Online Safety Systems in Sydney, which now addresses problems such as no labels. We do not sell any equipment which is not labelled. If a control does not have a label, we

¹⁵ This requirement is now Regulation 305 of the Equipment (Public Safety) Regulations 2007 S.R. No. 53/2007.

¹⁶ Workcover New South Wales, ‘Front end loaders and their attachments on tractors: A guide on health and safety standards’, November 2011.

have a label printed up and attached. We label all levers, controls and crush zones. We cannot sign off on a tractor until it passes all our checks."

36. Mr Grogan further noted:

"All Kerfab loaders that I have seen recently are labelled on the controls. All the other loaders we sell are labelled now."

37. Although I have formed the opinion that labelling on the operating lever for the front end loader may have prompted Mrs Fielding to operate it differently, I consider that appropriate steps have been taken to reduce the likelihood that front end loaders will be sold without appropriate labels.

38. Accordingly, I make no recommendations on this issue.

39. The Operator's Manual for the tractor shows that the remote control valve lever directs pressurized oil to the front end loader hydraulic system.¹⁷ Further, it seems that the remote control valve only operates when the operator places pressure on the lever in the tractor cabin.

40. This operating system is consistent with the current Workcover guide which states:

"Operating controls of the front end loader and its attachments should be of the hold-to-run (ie dead man) type, except for a float position on the front end loader lowering control, which can be retained in position."¹⁸

41. In these circumstances, if the response to the lever had been slower, the fork lift would have risen to less height before Mrs Fielding withdrew pressure on the lever.

42. Further, installation of a brake when the operator stops operating the lever would minimise the effect of a rapid stop on the load.

43. Australian Standard AS1418.1-2002 provides:

"Brakes shall be capable of bringing the fully loaded crane to rest, without shock, in the shortest time, consistent with safe working, and shall arrest the crane safely under all in service conditions."

¹⁷ Kubota Corporation, "Operator's Manual: Kubota Tractor Models M4700-M5400-M6800-M8200-M9000", p.51.

¹⁸ Workcover New South Wales, "Front end loaders and their attachments on tractors: A guide on health and safety standards", November 2011.

44. In circumstances where the load was rising rapidly, a brake that complies with Australian Standard AS1418.1-2002 would have prevented the unsecured load from falling on the roof on the tractor cabin and fatally injuring Mrs Fielding. **Recommendation 1**
45. Further, the speed with which a hydraulic system operates to raise the front end loader when the lever is activated depends on the size of the pump in the tractor auxillary hydraulic system.
46. The Kubota M6800 hydraulic connection has a pump flow of 64.7 litres per minute. This hydraulic pump flow is about the same as that in other tractors in Australia. Therefore, of itself, the pump speed is unlikely to contribute significantly to safety of the front end loader operation. Therefore, I make no recommendation on this issue.
47. In addition, the TMA Industry Code identifies the option of installing a height limiting device to reduce the risk of rollback.
48. This height limiting device option can be achieved by restricting the lift cylinder stroke in the lift circuit of the front end loader or by designing in a trip mechanism to activate a relief valve at a predetermined height.
49. Kerfab Industries did not implement either of these options in the front end loader attached to the tractor. Further, Kerfab Industries does not seem to offer them as options in their literature.¹⁹
50. Kerfab Industries specify a maximum lift height of 3.380 metres for their front end loader. However, the front end loader reached a height of about four metres before the gantry rolled back on to Mrs Fielding.
51. Accordingly, I have formed the view that a height limiting device installed in the front end loader would have prevented Mrs Fielding's death. **Recommendation 2**

Training and experience

52. The tractor retailer trained Mr Fielding in use of the tractor and the front end loader when he delivered them. He also provided Mr Fielding with safety information relating to their operation. Mr Fielding had also used the tractor a number of times.
53. Further Australian Standard AS2550.1-2002 specified general requirements for safe use of front end loaders to lift loads.²⁰

¹⁹ Kerfab, Plant Risk Assessment and Operators Manual Front End Loader, April 2010.

54. On the other hand, Mrs Fielding had not much experience using the tractor and no experience using the front end loader and she had not received any training.
55. Further, many skilled tasks, such as reversing a trailer, are counter-intuitive to the novice user. They require training and experience before they become accustomed to the way in which they operate.
37. The Safety Precautions section of the Kerfab Industries Operating Manual appropriately addressed these risks:

“Before operating the front end loader read the following safety instructions. Failure to comply with these warnings could result in serious injury or death.....

(d.) Never allow an inadequately trained person to operate the loader or to remove or install buckets of lifting attachments.”²¹

50. The Kerfab Industries Operators Manual continues to promote the importance of adequate training and experience.²²
56. Accordingly, I find that Mrs Fielding’s lack of training and inexperience with respect to the use of the front end loader contributed to her mistakenly operating the lever in the wrong direction and contributed to her death.
57. From a systems perspective, Workplace Health and Safety legislation imposes obligations on farming employers to ensure that their employees have appropriate training and experience before using tractors and front end loaders. This message is strongly promoted by WorkSafe Victoria.²³
58. However, these legislative obligations do not apply when farm machinery is used by unwaged family members on private property.
59. Further, Mr Fielding did not recognise Mrs Fielding’s inexperience was a risk to safe operation of the front end loader on the tractor until it was too late.

²⁰ Standards Association of Australia, Australian Standard AS2550.1-2002 Cranes, hoists and winches- safe use: General requirements”18 March 2011. This standard has been superseded by Australian Standard AS2550.1-2011.

²¹ Kerfab Industries, Front End Loaders Operation Manual, Safety Precautions, p. 2.

²² Kerfab Industries, Plant Risk Assessment and Operators Manual Front End Loader, April 2010.

²³ S. 21(2)(e) *Occupational Health and Safety Act (Vic)*.

60. Accordingly, in circumstances where family members and other volunteers frequently help on farms, front end loader owners need to be alerted to the risks that apply to inexperienced and untrained operators.
61. I recommend that the Tractor and Machinery Association and Worksafe Victoria cooperate to develop printed and other communication materials with basic safety information for all purchasers of tractors and front end loaders.
62. The information should emphasise that purchasers need to be aware of the relevant safety considerations for use and to provide this knowledge to other inexperienced and untrained users before they operate the tractor and/or loader. **Recommendation 3**

Suitability of the loader and tractor for lifting the gantry

63. The circumstances of Mrs Fielding's death highlight the need for owners and operators of farm machinery to evaluate whether the machinery is appropriate for the intended task.
64. Mr and Mrs Fielding were using machinery that comprised a Kubota tractor fitted with a Kerfab front end loader to lower a metal gantry from the back of a trailer to the ground
65. The TMA Industry Code requires the tractor engine power rating to be matched to the load capacity of the front end loader to achieve satisfactory operating performance and the tractor hydraulic system must be capable of the pressure and flow rate required to lift the load at an acceptable speed.
66. The circumstances of the incident in which Mrs Fielding died are consistent with these requirements being achieved.
67. Further, the TMA Industry Code requires the tractor to be fitted with a roll over protection system ("ROPS") or a cabin incorporating a ROPS that complies with Australian Standard 1636 or equivalent.
68. The tractor cabin was fitted with a fibre glass roof and two post roll over protection. These ROPS and Falling Object Protective Structures ("FOPS") had been tested and complied with Australian Standard AS1636-1984.²⁴
69. By 2007, Australian Standard AS1636-1984 had been superseded by Australian Standard AS1636.1-1996.²⁵ Australian Standard AS1636.1-1996 required the strength of the cab or

²⁴ Australian Standard, "Agricultural Wheeled tractors – Rollover Protective Structures – Criteria and Tests", AS1636-1984.

frame to endure the impact blow of a free swinging mass of 2000kg and a crushing impact of 33000kg²⁶ for at least five seconds.

70. It seems very unlikely that the weight of the gantry exceeded 33000kg. Therefore, presuming the gantry weighed less than 33000kg, its penetration of the cabin of the tractor is evidence that that the ROPS and FOPS on the tractor did not comply with Australian Standard AS1636.1-1996.
71. Further, the TMA Industry Code of Practice requires:

“...where there is a risk of objects or material falling on the operator the ROPS should be fitted with a Falling Object Protective Structure (FOPS). Depending on the application, the FOPS should comply with Level 1 of AS 2294 if it is an agricultural or similar operation or Level 2 of AS 2294 if it is a heavy earthmoving operation.”
72. Level 1 of AS 2294 provides protection from falling bricks, small concrete blocks and hand tools encountered in operations such as highway maintenance, landscaping and other construction site services.²⁷
73. However, WorkSafe Western Australia believes that, for most agricultural applications, the applicable protection is level 2. Level 2 FOPS is achieved by a four-post ROPS which may also afford the operator some protection from falling objects.
74. Accordingly, the tractor required ROPS and FOPS sufficient to prevent the load entering the cabin. Patently this protection was not achieved by the fibre glass roof and two post roll over protection which complied with Australian Standard AS1636-1984 but was penetrated by the falling gantry.
75. Mrs Fielding would also have been protected from the falling gantry if the ROPS was a four post housing with stronger roofing material. **Recommendation 4**
76. Kerfab Industries had manufactured and fitted front-end loaders to tractors since 1993. All items are commissioned and fitted by trained and qualified Kerfab Industries personnel.

²⁵ Standards Association of Australia, Australian Standard, “Tractors-Roll-over protective structures-Criteria and tests, Part 1: Conventional tractors”, AS 1636.1-1996.

²⁶ 20 x mass of tractor: Standards Association of Australia, Australian Standard AS 1636.1-1996, “Tractors-Roll-over protective structures-Criteria and tests, Part 1: Conventional tractors”, p. 14.

²⁷ Standards Association of Australia, Australian Standard AS 2294.1:1997 Earth-moving machinery - Protective structures.

77. The front end loader was designed and built to comply with Australian Standard AS1418 and the TMA Industry Code of Practice.²⁸ The maximum lift height was 3.380 metres. The maximum safe working load was 1070kg. This probably exceeds the weight of the gantry.
78. Therefore, other than the shape and instability of the gantry, there is no evidence before me to suggest that the load exceeded the capacity of the front end loader.
79. Alternatively, Mr Fielding could have secured the gantry to the front end loader to prevent it falling as it did when the fork lift rose high enough to cause a roll over.
80. In the absence of any prediction that this would occur, securing the gantry so as to lower it 500cm to the ground does not seem to me to be a practical general safety measure.
81. Where a task cannot be performed within the confines of the protective mechanisms, an alternative should be considered. For example, WorkSafe indicates that if there is no FOPS fitted to a tractor, the loader should only be used for free flowing material.²⁹
82. Accordingly, I consider that the Tractor and Machinery Association and Worksafe Victoria should develop a written material and other communication devices directed at all purchasers of tractors and front end loaders which explains the importance of working within the scope of the tractor or front end loader's intended uses and the safety mechanisms in place. **Recommendation 5**

Conclusion

83. On 10 June 2007, Mrs Fielding was helping Mr Fielding lift a gantry from a trailer on to the ground.
84. From a systems perspective, Mrs Fielding died because a sequence of risk factors aligned when she attempted to operate the controls on the front end loader to lower the unsecured gantry on the front end loader.
85. These risk factors included:
 - Failure to secure the gantry to the front end loader;
 - Counter-intuitive operation of the lever to control the height of the front end loader;

²⁸ Australian Standard AS1418 – Cranes, Hoists and Winches. See attachment 1 to the statement of Keith Chirnside, Kerfab, 'Agricultural Materials Handling Products', p.1.

²⁹ Worksafe Victoria, 'Safe Use of Tractors with Attachments', June 2009.

- Mrs Fielding's expressed preference to operate the controls for the front end loader rather than steady the gantry when it was 500cm from the ground;
- Mrs Fielding's inexperience in operating the front end loader on the tractor;
- Mr Fielding's failure to instruct Mrs Fielding about the operation of the front end loader;
- Lack of labels and signs on the controls of the front end loader to alert Mrs Fielding about their counter-intuitive operation requirements;
- Mrs Fielding continuing to push the lever backwards so that the front end loader rose rapidly to a height of about four metres;
- Absence of a brake and/or or height limiting device fitted to the front end loader;
- Destabilisation of the unsecured gantry associated with the speed with which the front end loader rose so that it rolled back on to the cabin of the tractor; and
- Failure of the roll back protection system and the roll over and falling object protection systems on the tractor to prevent the gantry entering the cabin and trapping Mrs Fielding.

85. If any one of these contributing factors had been avoided, Mrs Fielding would not have died in the way she did on 10 June 2007.

RECOMMENDATIONS

Pursuant to section 72(2) of the **Coroners Act 2008**, I make the following recommendation(s) connected with the death:

1. That the Tractor and Machinery Association and Worksafe Victoria recommend installation of a brake in front end loaders intended for agricultural operation that complies with Australian Standard AS1418.1-2002. **Recommendation 1**
2. That the Tractor and Machinery Association and Worksafe Victoria recommend installation of a height limiting device in front end loaders intended for agricultural operation. **Recommendation 2**
3. That the Tractor and Machinery Association and Worksafe Victoria cooperate to develop printed and other communication materials with basic safety information for all purchasers of tractors and front end loaders that emphasises the need to be aware of the relevant safety

considerations for use and to provide this knowledge to other inexperienced and untrained users before they operate the tractor and/or front end loader. **Recommendation 3**

4. That the Tractor and Machinery Association amend their Industry Code of Practice for Manufacture and Supply of Front End Loaders for Use on Agricultural Tractors in Victoria to advocate installation of four post roll over protection for tractors fitted with front end loaders with a maximum lift height greater than the height of the cabin. **Recommendation 4.**
5. That the Tractor and Machinery Association and Worksafe Victoria develop a written material and other communication devices directed at all purchasers of tractors and front end loaders which explains the importance of working within the scope of the tractor or front end loader's intended uses and the safety mechanisms in place. **Recommendation 5**

I direct that a copy of this finding be published online and provided to the following::

Grogans Machinery
Kerfab Industries
Worksafe Victoria
Tractor and Machinery Association of Australia

Signature:



Date: 14 November 2013