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Hesse Child Farm Safety Program Final Report

A report from the National Centre for Farmer Health (NCFH), Hamilton summarising the Hesse Child Farm Safety Program

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Hesse Child Farm Safety Final Report

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EXECUTIVE SUMMARY

Children have been identified as a population vulnerable to farm-related injury. The blurred division between the farm as a home and a workplace means that children are regularly exposed to many agricultural hazards. The rate of child farm-related injuries (under 15 years) have remained consistent in Australia over the last 20 years and the key hazards causing these have also remained the same (water bodies, quad bikes, tractors, farm vehicles, motorbikes and horses).

This report aims to evaluate the Hesse Rural Health Services' Child Farm Safety Program. The child farm safety program was launched as a pilot program in 1995 in three schools and has since expanded to 10 schools in the catchment area. The six week program aims to reduce farm-related injuries, identify preventative risk factors and increase rural children's awareness and knowledge of potential farm-related hazards. It acknowledges farmers are often unwilling to change their behaviours so targets the next generation as positive change agents for the family.

Methods used to evaluate this program included analysis of student pre-program and post-program farm safety knowledge surveys. Teacher feedback surveys and return on investment evaluation assisted in determining the value of this program.

The results of the evaluation highlight the importance of this program in increasing children's farm safety knowledge. They demonstrate an improvement in student farm safety knowledge between the pre and post program surveys. Teacher evaluations highlighted the significance of the program, particularly the engagement of the students and educational importance of the farm walk. Additionally, the weekly content presented remains in line with the key hazards causing child farm injury on Australian farms.

The report concludes with recommendations for the program focusing on ensuring the continued review of weekly course material, opportunities for innovation, the engagement/inclusion of parents and data management strategies including the use of online platforms to complete and compile pre and post surveys. Additionally, evaluating safety behaviours pre and post program will further assist in understanding the impact of this program. Finally, the report outlines recommendations on the expansion of the program throughout regional Victoria, highlighting the need for an increased digital presence to access wider geographical areas. This would also allow students/parents access to materials

post completion of the program to reinforce the key messages, with the ultimate aim of shifting a culture of farm safety in Victoria.

Based on the value of the program, and the role early education plays in influencing the culture of farm safety in farming communities, future and further investment in this program is warranted.

Contents

BACKGROUND

BEST PRACTICE FOR FARM INJURY PREVENTION

Research suggests that the leading mechanisms for farm injury are variable and often depend on the source of data. However, common mechanisms include: bystander and passenger run overs (fatalities); drowning (fatalities); machinery entanglements (hospitalisations); falls from heights (hospitalisations) and animal trauma (hospitalisations, restricted activity injuries) (1).

Child farm safety in Australia came under focus in the 1990s following reports of high rates of injury (2). Previously, the focus of agricultural OHS approaches was on employees of larger enterprises (3). While Farmsafe Australia promoted interventions targeting child safety on farms (e.g. safe play areas, seatbelts and helmet use), funding ceased in 2006 (4). It has been estimated that 82% of child deaths and 58% of child hospitalisations could have been prevented if the Farmsafe strategies were in place (5). The Rural Injury Prevention Primary Education Resource (RIPPER) was developed in 2005 to align with the school curriculum and educate children on farm safety. However, this program is yet to be evaluated. The farm safety guidelines developed in the late 1990's may still be relevant today, as the major farm hazards causing child farm injury have remain unchanged. However, the effectiveness of these guidelines have not been assessed (4).

Education—together with culture and behaviour change—is required for effective prevention of child farm injuries (4, 6). Typically, education programs are considered less effective injury prevention interventions and their long-term influence is unknown. They should, therefore, be implemented alongside other interventions, such as engineering controls and regulation (4, 7). As farming communities are heterogeneous, tailored prevention programs are required to address specific needs, empower communities to make better health and safety decisions, and create universal action (8). Children are active agents in their own risk taking behaviour and, likewise, their own injury prevention. Targeting children in prevention efforts has been shown to positively –in the short term –influence their safety behaviour and that of their parents (9, 10).

A review of the literature by the National Centre for Farmer Health (11) highlighted the need for more targeted preventative strategies for child farm safety (Appendix – 5).

The review highlights research that has addressed a number of key factors associated with child farm-related injuries; child exposure to dangerous environments, the risk-taking culture, multi-generational farming families, the role of supervision, child labour and the role of regulation, limited targeted farm safety programs, underuse of safe play areas, financial priorities and poor understanding and operationalisation of the hierarchy of control.

HESSE RURAL HEALTH

Hesse Rural Health Service (Hesse) was formed in 1994, combining Beeac and District Hospital, Leigh Community Care Centre and the Winchelsea and District Hospital. The health service covers three local government areas; Surf Coast, Colac Otway and Golden Plains. Hesse are dedicated to providing and facilitating access to best practice health, aged and community based services that strive for wellbeing.

HESSE CHILD FARM SAFETY PROGRAM

BACKGROUND

The Childless Tractor School Program was initially developed at the Leigh Community Health Centre in 1994 in response to the enormity of child farm injuries. An initial seeding grant from Health and Community Services in 1995 saw the development of the pilot program—a trauma preventative program targeting injuries and deaths in children living on farms. It aimed to educate children aged 9 to 11 years on accident awareness and prevention through the use of media based peer review. Age relevant classroom based course materials and a learning package were developed to cover the core safety areas. Developed following an extensive literature review, these topics covered; farm rules, basic first aid and emergency services, tractor safety and other farm machinery, motorbikes and quadbikes, chemicals and workshop safety and animals, water and grain safety. The pilot program was delivered by community nurses in three schools (Rokewood, Teesdale and Shelford) consisting of one hour sessions over six weeks. In total, 60 children participated. A full timeline of the programs developmental funding and lifespan can be found in Appendix 1.

PROGRAM LOGIC

The Hesse child farm safety program provides an education program aiming to raise awareness, increase knowledge and engage parents through targeting their children. The

program acknowledges farmers are often unwilling to change their methods, therefore, targets the next generation; using children as positive change agents on the family's farm safety behaviours.

The goal of the Hesse child farm safety program is to reduce the farm related injuries, identify preventative risk factors and increase rural children's awareness to potential farm-related hazards (see figure 1). The objective of the program is to provide children with a wide knowledge base:

- To make informed decisions for their own safety, by creating a stimulating environment in the classroom, either by the nurse or other presenters based on 'experiences' (ie. farmers who have been injured, and other facilitators from related industries)
- Through the use of interactive video, overhead projections, peer review, classroom discussions and the completion of a workbook.

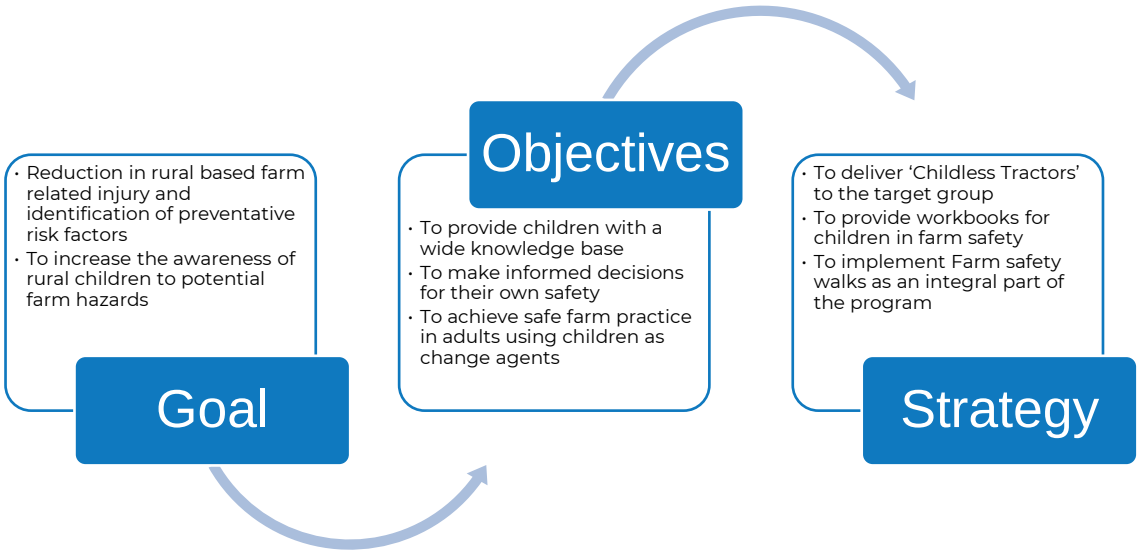


***FIGURE 1**: HESSE Child Farm Safety program logic*

IMPLEMENTATION METHOD

Following the successful completion of the pilot program, the program was expanded within the catchment area. Since 2002, the program has been delivered in ten primary schools in the Hesse Rural Health catchment area (Figure 2).

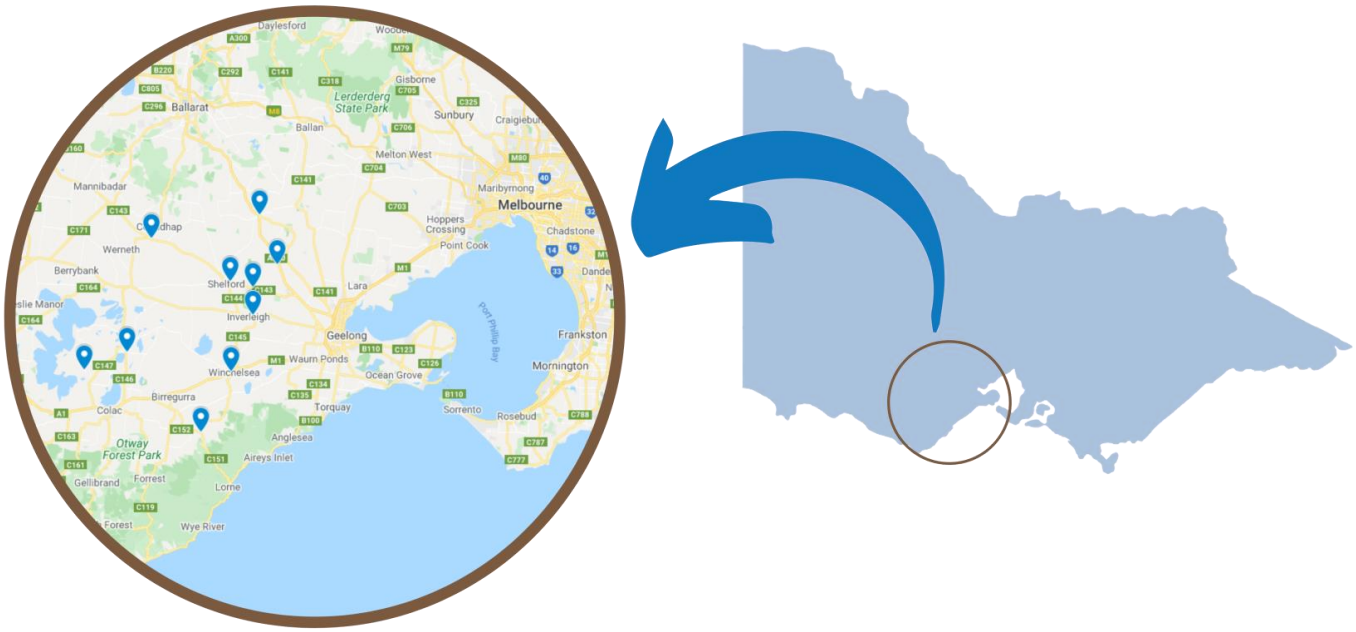


FIGURE 2: *Map of the current ten schools participating in the HESSE Child Farm Safety Program*

The Hesse child farm safety program aims to complete biennial visits to each participating school to educate the new cohort of year five and six students. It utilises a mixture of methods to create awareness and increase children's knowledge, including interactive video, overhead projections, peer-review and classroom discussions. Children are provided with a workbook as a revision tool to complete throughout the seven weeks. This is seen as a tool to involve parents and siblings in topic discussions as the workbook is taken home to reinforce what was learnt at school. During the final session, children participate in a model farm walk to put their learnings into a real setting. During the farm walk children are able to meet the characters that appear throughout their workbook.

New farm safety topics are presented in each week of the program. These have been altered/updated throughout the life of the program. The current topics consist of:

- Week 1: Farm rules and why we have them
- Week 2: First aid, CPR and snake bites
- Week 3: Tractors, machinery and overhead power lines
- Week 4: Quad bikes and horse riding
- Week 5: Chemical and workshop safety, hearing protection
- Week 6: Animal and water safety
- Week 7: Farm walk. Presentation of certificates
- Completion: Teachers provide handwritten assessment on content, resources and presentation. Children complete workbooks for evaluation of understanding and complete pre and post program tick box evaluation form

The weekly content (Figure 3) addresses the key hazards responsible for child farm-related injury; water bodies, quad bikes, farm vehicles, tractors, motorbikes and horses (4, 11).

Figure 3: *Hesse Child Farm Safety Program Weekly Content*

Innovative Teaching Resources

The final week of the program involves children attending a model farm (Farm Walk). This session allows children to put into practice their learning from the program in a real farm setting to identify farming hazards. Additionally, during the farm walk children meet the characters (Farmer Bill, Nana Maz and Lucy) that are presented to them throughout the completion of the workbook. This practical and interactive experience is valuable to both children living on and off farm, providing practical exposure to common hazards they may not have experienced before. This is particularly important for non-farming children who visit farms of friends and family members.

SCHOOLS/PARTICIPANTS

Over the programs lifespan, it has been delivered to Rokewood, Shelford, Teesdale, Cressy, Beeac, Inverleigh, Winchelsea, Mt Moriac, Moriac, Deans Marsh, Alvie, Lethbridge and Meredith Primary Schools. Since 2012, there have been an average of 92 child participants annually (Figure 4).

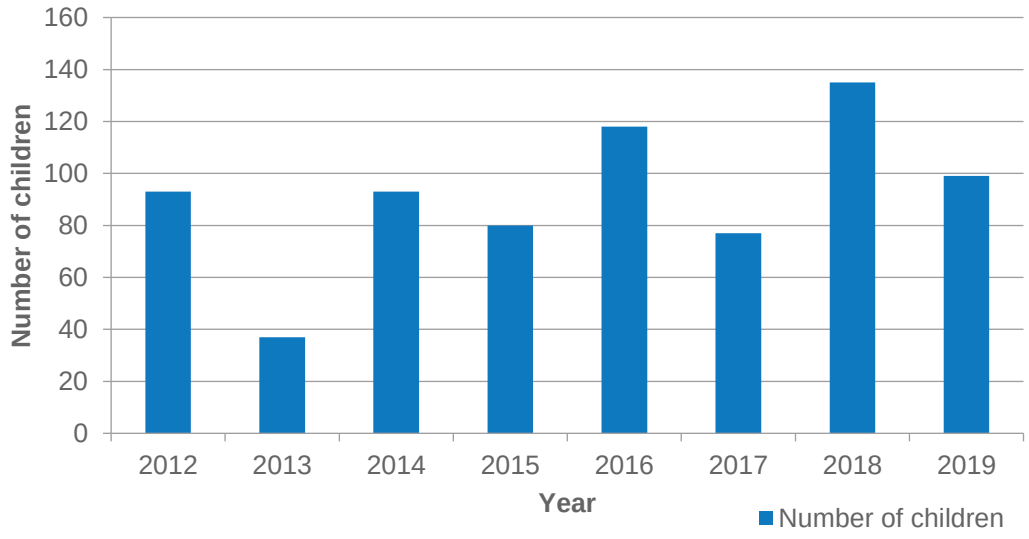


***FIGURE 4**: graph showing the number of yearly participants in the HESSE child farm safety program, 2012-2019*

The current participating schools are located across three Local Government Areas (LGAs)—Surf Coast Shire, Colac Otway Shire and Golden Plains Shire (Figure 3). The prevalence and type of farming differs between these LGAs:

- Surf Coast Shire (schools: Deans Marsh, and Winchelsea) – 5.85% of the population employed in the agricultural, forestry and fishing industry. Poultry, dairy, sheep, beef cattle, nurseries and cut flowers are the most significant agricultural industries in the Surf Coast Shire.
- Colac Otway Shire (schools: Alvie and Beeac) – 13.03% of the population employed in the agricultural, forestry and fishing industry. The most common forms of farming in the shire are dairy, beef cattle and boutique farming.
- Golden Plains Shire (schools: Inverleigh, Lethbridge, Meredith, Shelford, Rokewood and Teesdale) – 23.21% of the population employed in the agricultural, forestry and fishing industry. Egg farming, poultry, pigs, sheep, lambs and goat dairy are well-established farming types in the Golden Plains Shire.

The regional Victorian average of employment in the agricultural, forestry and fishing industry is 7.7%.

EVALUATION OF PROGRAM

Student surveys

All children are required to complete a pre (week one) and post (week seven) survey to evaluate the impact the program has on farm safety knowledge. Survey questions have changed overtime, however, since 2012, questions have remained consistent. The ten questions are focused on key areas on child farm safety:

1. Hay bales
2. Tractors
3. Playing in paddocks with large animals
4. Storage of farm chemicals
5. Wearing safety helmets
6. Calling emergency services
7. Riding on farm vehicles
8. Correct age for riding on adult quad bikes
9. Power Take Offs
10. Water safety (dams)

Teacher surveys

Following completion of each seven week program, the teacher was asked to complete a feedback survey. Questions were focused on the overall presentation, resources, the programs strengths and weaknesses and the farm walk.

In total, 17 teachers completed the survey between 2012 and 2019. Overall, the program was well-received by teachers with them acknowledging the importance of farm safety in their rural area. The key themes arising from the surveys:

1. Teachers were overwhelmingly positive about the facilitators' use of their own experiences to highlight safety issues. The facilitators created a comfortable environment in which children were comfortable to share their own stories and participate in discussions.
2. PowerPoints were valued but it was suggested there is a need for more interactive and 'hands on' activities to keep students engaged (some students found it difficult to sit and concentrate for the hour).

3. The farm walk was invaluable in allowing the students to put their learnings into practice to identify hazards in a real farm setting. The barbeque lunch allowed everyone to come together at the end and have final discussions.
4. Teachers highlighted the value of the workbooks and suggested there should be more focus on completing these as they were important in sharing farm safety information at home with family and friends. Additionally, the DVD content was identified as engaging and beneficial, but, teachers recommended updating these and using Australian content.

ANALYSIS OF EVALUATION DATA

Student Survey

Data from student surveys were analysed from 2012. Questions have remained consistent since this time so allows for comparisons to be made. There were 760 children that completed the pre-participation survey, providing educators with important information regarding the current knowledge of the groups participating in each program. Completion of the pre and post-survey is dependent upon the number of children present during given sessions.

Pre-knowledge

The overall average of correct answers in the pre-survey was 72%. Figure 5 demonstrates the average percent of correct answers by question of the pre-survey. The results suggest greatest pre-knowledge in the overall cohort were in the areas of '000' emergencies (92), chemical storage (89%) and riding in tractors (87%). Conversely, PTO guards (44%), animal safety (50%) and riding in farm vehicles (55%) were the topics the overall cohort had the least knowledge prior to participating in the farm safety program.

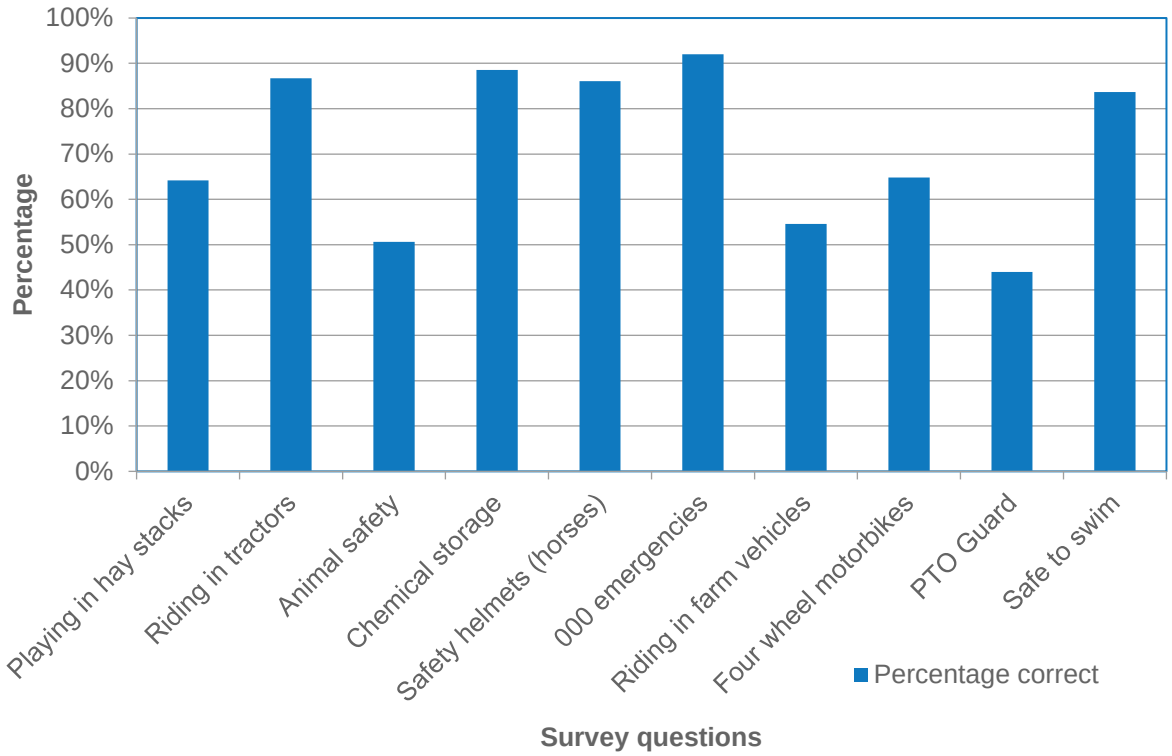


Figure 5. *Pre-knowledge survey average correct answers (n=760)*

Full pre-survey results by school are available for review in Appendix 2. Schools with the highest pre-knowledge were Meredith (76%), Inverleigh (75%), Lethbridge (75%) and Teesdale (75%). Alvie (57%), Rokewood (67%) and Shelford (68%) were the primary school cohorts with lower pre-program knowledge.

Interestingly, according to the Australian Bureau of Statistics, the towns of Alvie and Rokewood had the highest rates of employment in agriculture when compared to the other participating towns.

Post-knowledge survey (n=172)

To allow for accurate comparisons of specific changes in pre and post survey knowledge across cohorts in different areas, analysis included only those cohorts (learning groups) that had the same number of pre and post survey participants (n=172). However, in total, there

were a 687 students who completed the survey after completing the child farm safety program (Appendix 3).

The results suggest all participating schools had similar post program farm safety knowledge. On average, 90% of the post survey questions were answered correctly. The question on PTO guards remained the question with the most incorrect answers (71% correct), whilst the majority of children answered the chemical storage and '000' emergency questions correctly (98%).

Appendix 4 demonstrates the differences in pre and post farm safety knowledge between school cohorts (of the data available). Overall, there was an increase in students' farm safety knowledge in the 10 areas the survey explored. Animal safety had the greatest increase in correct responses (57% increase). Additionally, playing in hay stacks (28%), riding in farm vehicles (27%), four wheel motorbikes (26%) and PTO guard (24%) questions all increased percent of correct answers. The only question to not increase in percent of correct answers was '000' emergency services (received the most correct responses in the pre-survey). Both the Lethbridge 2013 cohort ('000' emergencies and safe to swim) and Winchelsea 2018 cohort (safety helmets and '000 emergencies) had two questions that decreased in percentage of correct answers.

The survey results highlight the importance and impact of this education program, clearly demonstrating improvements in student knowledge on farm safety. Importantly, the improvements in schools that had a lower knowledge baseline (from pre-survey results), eg. Alvie and Rokewood Primary Schools—based in large agricultural areas—with many of participating children are likely to be regularly engaging with the farm through family or friends, therefore, farm safety education is vital for their injury prevention.

RETURN ON INVESTMENT

The current budget below has been provided by HESSE and outlines the annual running cost of the child farm safety program. This will be utilised as the basis for further analysis of return on investment and impact of the program. To date the annual running costs to run the program at 4 schools per year (6 sessions per school) equate to a total of $7258 per annum ($1814.60 per school), including salaries and on-costs, travel.

Table 1. Hesse rural health farm safety in schools program annual budget (Based on delivery to 4 schools annually, 6 sessions at each school)

	Staff required	Hourly rate	Oncosts	Total Hourly rate	Total staff hours/year	Total cost/year
Farms Walks (inclusive of travel)	2	$47.43	25%	$59.29	32	$1,897.28
Session times	1	$47.43	25%	$59.29	24	$1,422.96
Session prep/clean up	1	$47.43	25%	$59.29	24	$1,422.96
Travel time	1	$47.43	25%	$59.29	17.6	$ 1,043.50
						$5,098.94
Travel cost/km @ 0.72c/KM						$1,071.36
Administration	1	$28.70	25%	$35.88	15	$538.13
Program materials cost @ $5/child						$350.00
Farm walk costs @ 2 walks/year						$200.00
TOTAL PROGRAM COST						**$7,258.43**

Based on the survey results available, the current investment in the running of the farm safety in schools program is shifting the knowledge of farm safety in participating children living both on and off farm. Based on the value of the program, and the role early education plays in influencing the culture of farm safety in farming communities, future and further investment in this program is warranted.

RECOMMENDATIONS

The following recommendations represent short, medium and long-term direction for the future development and delivery of the successful program.

WEEKLY COURSE CONTENT

- Continue to ensure materials and weekly content are regularly reviewed and updated to reflect any changes in agricultural industry culture, safety practice, statistics and available resources used in the program.
- Encourage and monitor family completion of the student workbook. As this program aims to use children as change agents for adults' farm safety practices, the workbook was identified as the tool used to engage the rest of the family in the farm safety program. As these are taken home additional materials to engage parents in farm safety could be beneficial—child farm safety checklists, farm walk list, conversation starters. Therefore, a focus should continue to be made on ensuring these workbooks are completed.
- Modernisation of the video content - Maintaining child engagement. Teacher feedback suggested an upgrade in the videos shown to students and use of Australian content may make it more relatable and engaging to students. It is also important to make sure the program is interactive and as hands-on as possible to ensure children's attention is maintained. Priority should be directed at assisting and enabling the delivery team to develop and utilise contemporary and contextually appropriate digital content. This may involve collaboration with both content creators and industry stakeholders.
- Establishment of an advisory group to provide insight, review and validation of educational material and evaluation. Such a group would include members from the farming community, industry stakeholders, safety representatives and education providers.

FUTURE EVALUATION

<u>Student Surveys</u>

- There were limitations in the available evaluation data resulting in challenges in fully evaluating the true impact the program on participating children and their communities. Analysis on school cohorts that did not have all post surveys complete was not possible. Strategies can be developed to ensure a maximum number of post-surveys

are completed by participating children. This will require increased budgeted staff allocation to enable school follow-up and program coordination .

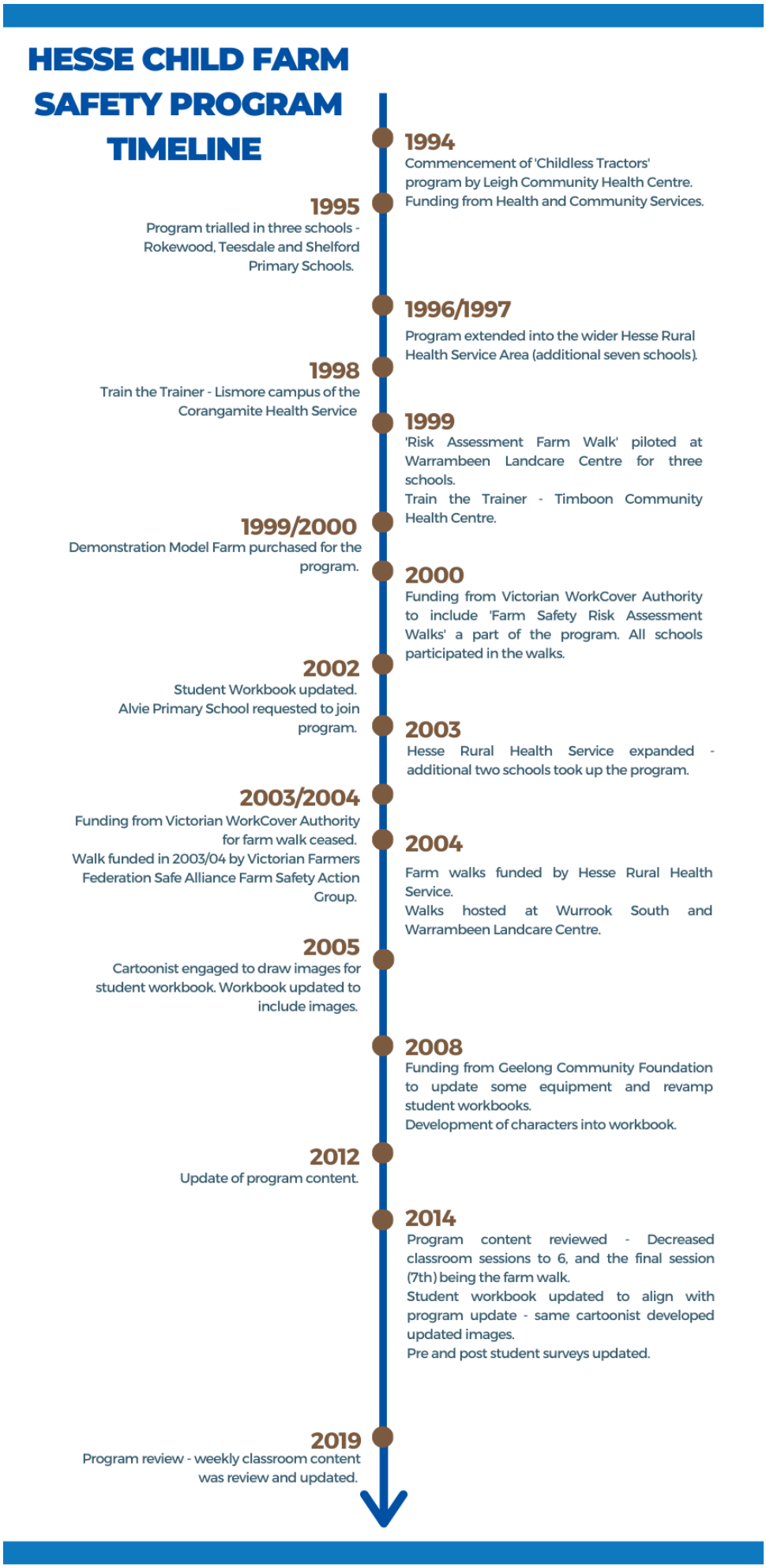
- Use of pre-survey to customise the program and tailor to each cohort.
- Longer-term follow up of students' knowledge retention is required to assess the impact of the program on farm safety culture in the region.
- Student surveys measured children's knowledge on ten farm safety areas. Future evaluation could take into consideration children's typical behaviours around the farm and their attitudes on farm safety. Understanding adoption of safety measures and typical farming behaviours is an important aspect of this program as it aims to prove children with a knowledge base to make informed decisions about their own safety.
- Development of online surveys may increase efficiency of data management and analysis. For example the Qualtrics and Kahoot! digital survey platform that allows participants to complete surveys and polls by teachers and students from any geographical area. This would allow for easier in session quizzes and follow up survey completion and management as a link can be sent to participants (schools) for completion. The survey platform is also able to develop reports and complete some preliminary analysis.
- Involvement of parents/caregivers in evaluation – evaluation and assessment through workbook activity completion workbook provided to work through with parents at home (checklists, farm walks, conversation starters) – consideration should be given to the mechanisms by which parents included in evaluation of the students/program – are they provided with summaries, photos, newsletter updates of the program as its being undertaken. Consider inviting parents to the farm walk, the success of this is highly dependent on and will be strengthened by the relationship of Hesse Rural Health with the host farm.
- Evaluation of impact on farm safety culture within communities

EXPANSION

- Expansion of this engaging farm safety program throughout regional Victoria is warranted. Strategic development and promotion of the program may be required when engaging new schools/regions:

- Increasing the programs online presence. Development of a website and social media platforms would increase awareness of the program and therefore potential interest and expansion.
- Allowing parents access to a website or online portal with farm safety resources and course material would assist in involving parents and starting farm safety conversations.
- Potential development of an app would assist reinforcing the key farm safety messages taught to children during the program. It has been suggested/proven education needs to be reinforced with other types of influences to maximise its impact, therefore, an app children can play on after completing the program would ensure messages are staying present in their lives (and not a one-off). This would also be beneficial for engaging children in various geographic locations.

APPENDIX 1: CHILDLESS TRACTOR PROGRAM TIMELINE



APPENDIX 2: PRE SURVEY KNOWLEDGE BY SCHOOL

	Alvie	Beeac	Deans Marsh	Inverleigh	Lethbridge	Meredith	Rokewood	Shelford	Teesdale	Winchelsea	**AVERAGE (question)**
1. Playing in hay stacks	63%	72%	54%	65%	80%	78%	43%	80%	55%	52%	64%
2. Riding in tractors	78%	90%	93%	91%	72%	91%	85%	95%	94%	78%	87%
3. Animal safety	39%	52%	43%	61%	64%	53%	53%	50%	49%	42%	51%
4. Chemical storage	N/A	93%	96%	93%	92%	81%	93%	61%	97%	91%	89%
5. Safety helmets (horses)	72%	83%	93%	88%	91%	90%	85%	80%	92%	87%	86%
6. 000 emergencies	N/A	97%	100%	94%	96%	92%	95%	61%	98%	95%	92%
7. Riding in farm vehicles	46%	59%	50%	54%	63%	55%	43%	70%	67%	39%	55%
8. Four Wheel Motorbikes	65%	66%	71%	69%	61%	76%	58%	75%	58%	49%	65%
9. PTO Guard	33%	43%	50%	51%	43%	59%	48%	15%	45%	53%	44%
10. Safe to swim	N/A	72%	86%	86%	89%	89%	70%	90%	91%	80%	84%
AVERAGE (school)	57%	73%	74%	75%	75%	76%	67%	68%	75%	67%	72%

APPENDIX 3: POST SURVEY KNOWLEDGE BY SCHOOL

	Alvie	Beeac	Deans Marsh	Inverleigh	Lethbridge	Meredith	Rokewood	Shelford	Teesdale	Winchelsea	**AVERAGE (question)**
1. Playing in hay stacks	84%	91%	100%	96%	N/A	88%	97%	95%	89%	78%	91%
2. Riding in tractors	82%	91%	100%	95%	N/A	90%	100%	95%	96%	93%	94%
3. Animal safety	71%	77%	100%	83%	N/A	78%	71%	95%	91%	80%	83%
4. Chemical storage	97%	95%	100%	100%	97%	96%	97%	100%	98%	95%	98%
5. Safety helmets (horses)	95%	82%	100%	95%	92%	95%	100%	100%	98%	91%	95%
6. 000 emergencies	100%	91%	100%	99%	94%	97%	100%	100%	99%	95%	98%
7. Riding in farm vehicles	76%	91%	100%	94%	86%	75%	87%	95%	88%	71%	86%
8. Four Wheel Motorbikes	92%	86%	100%	96%	86%	84%	95%	95%	86%	88%	91%
9. PTO Guard	71%	64%	100%	70%	69%	71%	82%	35%	63%	80%	71%
10. Safe to swim	78%	77%	100%	95%	92%	92%	92%	100%	96%	93%	92%
AVERAGE (school)	85%	85%	100%	92%	88%	87%	92%	91%	90%	86%	90%

APPENDIX 4: DIFFERENCE BETWEEN PRE AND POST CHILD KNOWLEDGE SURVEYS

	Alvie 2015 Difference	Beeac 2018 difference	Lethbridge 2013 difference	Lethbridge 2015 difference	Meredith 2012 difference	Rokewood 2019 difference	Shelford 2012 difference	Shelford 2014 difference	Winchelsea 2018 difference	**Average question difference between pre and post**
1. Playing in hay stacks	13%	60%	N/A	N/A	10%	50%	14%	15%	35%	28%
2. Riding in tractors	7%	20%	N/A	N/A	-15%	14%	0%	0%	25%	10%
3. Animal safety	40%	0%	N/A	N/A	50%	29%	86%	23%	60%	57%
4. Chemical storage	0%	0%	0%	13%	20%	7%	0%	0%	2%	5%
5. Safety helmets (horses)	40%	0%	4%	6%	0%	14%	0%	31%	-3%	10%
6. 000 emergencies	0%	0%	-4%	0%	5%	7%	0%	0%	-5%	**0%**
7. Riding in farm vehicles	20%	20%	19%	19%	45%	36%	14%	31%	43%	27%
8. Four Wheel Motorbikes	33%	0%	33%	35%	15%	50%	14%	23%	30%	26%
9. PTO Guard	13%	20%	4%	55%	20%	50%	0%	31%	28%	24%
10. Safe to swim	0%	0%	-4%	10%	15%	21%	14%	8%	15%	9%
TOTAL	**24%**	**12%**	**7%**	**16%**	**17%**	**28%**	**14%**	**20%**	**23%**	18%

*this was only completed for school cohorts where the same number of pre and post surveys were completed

Biggest improvement – Rokewood, Alvie, Winchelsea, Shelford → greatest improvements (also were the overall lowest pre-knowledge)

Lowest improvement – Lethbridge –

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