RMCG

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Truck wash and effluent disposal review

Final Report

Agriculture Victoria, DEECA

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Table of Contents

Executive Summary

Operating an efficient, cost-effective and clean fleet of livestock transport vehicles is a central part of maintaining a profitable and disease-free livestock industry that meets the needs of livestock producers and Victoria's large domestic and export meat processing sector.

In 2022, the Victorian Cattle, Sheep and Goat, and Swine Compensation Funds through the Livestock Biosecurity Funds Grant Program administered by the Department of Energy, Environment and Climate Action (DEECA) supported a review of the existing network of publicly accessible livestock truck wash and effluent dump facilities in Victoria.

The aim of the review was to identify gaps in the network, assess the current and future demand for truck wash and effluent disposal facilities and provide options and recommendations to address the gaps.

The review found strong evidence of a functional regional and rural truck wash network serving the needs of the livestock industry across Victoria, other than in the Greater Melbourne area.

The main findings are presented in relation to the project's **terms of reference**:

1. Relevant trends and prospects in livestock industries

Findings on Victoria's livestock industry of direct relevance to this study included:

- The livestock industry's large contribution to Victoria's economy was $8.5 billion (farm gate value) in livestock products in 2021 with a further $8.8 billion in export value, of which $4.3 billion related to meat exports (report section 2.1).
- The prosperity of Victoria's livestock industries and the communities that rely on them will be jeopardised if a future emergency disease outbreak is not quickly contained.
- Representative livestock movements in Victoria were analysed using NLIS data and spatially illustrated for the study (section 2.2, Appendix 1). Movements of livestock direct from farm to abattoir have increased as the number of livestock purchased from some saleyards by meat processors has declined. Trading of both prime and store livestock through on-line selling platforms (such as Auctions Plus) is also increasing and industry confirmed that this trend was expected to continue. There may be a related impact on the location and viability of truck wash facilities, given that most share a site with regional saleyards, and are maintained and managed by saleyard team members.
- Some saleyards are however maintaining annual throughput, but of concern is that two truck washes are due to cease operation following closure of livestock exchanges: Geelong and Warrnambool.
- Livestock production fluctuates in response to seasonal trends and there is no change in livestock numbers in Victoria forecast so it is expected that the livestock movement freight task and the demand for truck wash services will remain relatively stable in future years (detailed in sections 2.1, 3.2), noting also that this could change if a higher standard of washing practice was adopted by industry, particularly without accompanying upgrades to equipment and facilities.
- Depending on the pathogen, demand for truck wash facilities is likely to increase during future emergency disease outbreaks. Truck washes are also likely to play an important role during outbreaks by reducing the risk that transport vehicles will spread of the pathogen.

2. Demand and need for truck washing services, and gaps in existing network of facilities

Findings on the status of the Victorian truck wash network and the demand for washing services included:

- There was in the order of 2 million sheep, cattle or pigs either originating within or outside Victoria delivered to locations within Victoria during September 2022. This would indicate in the order of 20 to 25 million livestock are moved into or within Victoria each year. The most common movement type was farm to abattoirs followed by saleyard to abattoirs. Some livestock, within all livestock categories, were transported long distances from both within Victoria and interstate to Victorian abattoirs. Mapping for the study reflects that livestock production is highly dispersed with more concentrated pockets of production spread throughout the larger tri-state area (Vic, SA, NSW). Animals can travel long distances to be processed in locations closer to customers, markets and export points (report section 2.2). Livestock are also shipped then transported by road for processing from Tasmania.
- Goats are also transported to Victorian abattoirs from NSW and SA rangeland areas (in the order of 850,000 head per year) and approximately 505,000 sheep and almost 44,000 cattle were transferred from Tasmania to Victoria in 2022.
- Metropolitan Melbourne based abattoirs process a significant proportion of livestock either grown in or entering Victoria (in the order of 85% pigs, 40% cattle, 30% sheep) and this is likely to continue. It is expected that as long as abattoirs remain relatively labour-intensive operations these facilities will remain metropolitan based.
- Modelled livestock truck movements found evidence of a substantial gap in the coverage of truck wash facilities both west and north of Melbourne with the nearest truck washes 60-160km from key delivery points to western Melbourne abattoirs (section 4.1). This gap will be deepened when the Geelong facility is closed.
- By contrast the coverage of the truck wash network in the remainder of Victoria and border areas (around 40 operating of which 30 are located in Victoria) was found to be adequate with the majority of washes having capacity to wash additional trucks, even on busy livestock sale-days. Only a very small number of truck washes reported that congestion impacted usage.
- The attributes in terms of functionality of existing truck wash facilities were reported by users and operators to be mixed. While the majority were rated as satisfactory, the facilities at some sites were deemed to be inadequate by users' representatives. For some facilities there were concerns about inadequate water pressure and volume, for example, particularly when more than one bay is in use (section 3 and Appendix 1 case studies, for further information on truck wash attributes).
- Although a number of the significant costs of operating a truck wash were typically incorporated into other activities related to saleyard operations, around half of surveyed operators felt that the usage fees collected for their facility generated sufficient income to cover operating and maintenance costs. Higher use sites were more likely to be 'paying their way'.
- Usage data (provided by Avdata[1] where permission had been gained from operators) found a wide range in intensity of use between the busiest sites in close proximity to regional abattoirs, higher throughput saleyards and on the main road and highway network. The data also supported that most sites had the capacity to handle more trucks.
- While some regional variations were evident (e.g. an increase in number of uses at Hamilton and Ballarat) there was no overall discernible trend or change in truck wash usage patterns over the past 5 years. Across the network where data was available both the number of truck wash visits and wash hours remained steady. There was also little change in washing patterns at each site i.e. the average time taken per wash and the proportions of shorter, medium and longer wash times remained similar over the 5-year period. Average wash times per wash however varied between sites i.e. from 23 minutes at Casterton to 77 minutes at Horsham sites.

[1] Avdata Pty. Ltd provides operations and revenue collection services to truck wash facilities.

3. Need for additional facilities: number, their location(s) and infrastructure requirements

Findings on the need for either new or upgraded truck wash facilities included:

- Strong evidence of unmet demand for truck washing services within a short detour from the Western Ring Road or Hume Highway (section 4.1).
- Options to augment the network included:
  - New purpose-built facility west or north of Melbourne (on its own or co-located with an existing heavy vehicle and truck services centre)
  - Upgrades to strategically located washes in the vicinity of the identified gap in the network (these options are detailed in section 4.2)
- Ratings of individual truck wash facility attributes by livestock transporters highlighted the key characteristics that would optimise use. These included the attributes that enable the fastest and most effective wash and attributes that improve amenity: a good slab slope, high water quality and pressure, good toilet and shower facilities and ease of access.
- A detailed list of desirable truck wash attributes was developed that could be used to inform future upgrades. Ways to augment the existing truck wash network to help mitigate risks of spread during a disease outbreak were also considered (section 4.3) noting that any emergency response measures including improved transport hygiene, would be designed by animal health experts to counter the specific characteristics of the pathogen.

4. Relevant Environment Protection Authority (EPA) guidelines and regulations on effluent management

Findings on the key operating factors affecting truck washing and the operation of facilities included:

- In most cases, truck washes are integrated with a larger activity (being a saleyard or abattoir) for which waste and environmental compliance, permissions and management requirements are set out clearly in the environmental legislation (section 2.3).
- Even when liquid effluent is discharged as trade waste to the local wastewater treatment network, site managers must always observe their general environmental duty, including maintaining equipment, assessing the environmental risks and implementing appropriate controls, development and maintenance of adequate systems, work procedures and staff training.
- Whether wastewater facilities for truck washes would need to be licensed by EPA or may be exempt from licensing needs to be considered on a site-by-site basis. In some cases, a development license and / or an operating licence may be necessary.
- Under Schedule 1 the Environment Protection Regulations 2021, (*Prescribed permission activities and fees*) there is no activity that matches “truck wash”, but activities B02a and B02b provide for “livestock saleyards or holding pens” which appears to be an appropriate classification for truck washes. Under the schedule, if the throughput is more than 10,000 animal units per year, these activities are a “prescribed development” (meaning a new facility would require a development licence) and depending on whether the wastes are discharged solely to land, either require an operating permit or operating licence.
- Saleyards operating in Victoria meet this threshold and a range of wastewater treatment structures were reported to be in use at truck washes. These mostly included primary filtering to remove and stockpile waste solids, connection to urban wastewater treatment plant and discharge to a dedicated discharge area. The types of wastewater infrastructure at each site depends largely on annual throughput and whether the site is connected to a town sewerage/wastewater system or whether it has its own standalone wastewater and manure treatment facilities.

- Wash-down frequency is not legislated in Victoria and industry is therefore self-regulating in this regard. Stakeholders through peak industry groups (VFF, STAV, LRTAV) provide information and support to livestock transporters to operate with a duty of care regarding mitigating animal welfare, meat quality, biosecurity and effluent management risks.
- A registered Industry Code of Practice, *Managing Effluent in the Livestock Supply Chain* (NHVR) outlines practices for minimising the risks of livestock effluent loss during transit, noting that the transport vehicle operator has little control over the amount of effluent generated but is responsible for ensuring effluent does not spill from crates during transit. This is managed by off-road parties during the period before livestock are loaded and also reliant on the availability of effluent disposal facilities at drop off points (section 2.4).

5. Indicative current costs of constructing and operating a new facility

Research was conducted to determine the attributes and costs of constructing and operating a modern stand-alone roofed facility of 3 bays separated by tilt-slab concrete walls, providing 24-hour, 7-day priority access to the livestock carrying industry (section 4.5). The main findings were:

- Construction (capital) costs estimated at $3.1 million
  - Construction, plumbing, water supply and stormwater management infrastructure are the largest cost items
  - Capital costs do not include the costs of acquiring the site, any site-specific issues that need to be addressed, for example site related preparatory earthworks, and any major road infrastructure developments required to connect the facility with freeway/road access.
- Operation and maintenance (O&M) costs estimated at $789,270 per year
  - Water supply, wastewater disposal and Avdata fees are the largest cost items.

6. Likely steps needed to improve truck washing in the event of a disease outbreak (noting the difficulty in prescribing specific or effective requirements for the wide range of possible individual disease outbreaks)

After review and consideration of the current truck wash network, required steps during an outbreak could include:

- Improved site security and surveillance (possibly including independent certification after each wash), monitoring and recording of all truck movements
- Consideration of including a transport liaison person to assist implementing appropriate response measures at truck washes
- Improved separation and isolation of vehicles, people (through site layout and traffic management) and thorough cleaning of the wash facility between uses
- Improved disinfection, detergent and drying facilities
- Site-specific measures dependent on location, materials of facility (section 4.3).

7. A financial analysis of the capacity of a well-located new truck wash facility to be a profitable investment and self-supporting (or a commercial operation)

The key findings of the financial analysis are outlined below:

- Based on assumptions on demand (or level of use) and wash fees, a new three-bay truck wash development on the outskirts of Greater Melbourne would be moderately financially viable over a 20-year operational period with peak revenues from project year (PY) four onwards estimated at $1.50m per year. Water fees applied on the basis of minutes of wash operation accounted for 94% of total

revenue, and the average revenue per truck washed was $179 with significant variation based on the size of vehicle.

- A capital contribution from government and/or industry makes a substantial difference to the project's financial viability. Without a contribution by the government, the project does not become profitable (at a 7% discount rate) until project year 12 (PY12), whereas with a $3m contribution by government or industry, it becomes profitable PY3.
- A $1m contribution (one-third of total capital cost) would increase the NPV to $2.47m and IRR to 18.7%, which is likely to be viewed as an attractive commercial return for a potential investor.
- It is noted that land costs and significant roadworks are not included within the financial analysis calculation. If these were to be included and needed to be purchased by the investor, the project is unlikely to be financially viable. Assessing potential site options in the Greater Melbourne area, and associated land and roadworks costs if applicable, could potentially be the focus of a future project.
- The utilisation rate used for the financial analysis equates to 23% of total demand for truck washes of livestock transport returning from delivering to abattoirs in Greater Melbourne.
- The utilisation rate of the facility (as a % of capacity) contains the highest degree of uncertainty for the financial model, and high utilisation of the facility is a key factor in determining the financial success of the facility.
- The target utilisation rate would be much more likely to be met if the general trucking industry was able to utilise the facility (even if access was prioritised for livestock transports during recognised core livestock movement times).
- A business model based on the construction of a new truck wash in close proximity to Melbourne using industry funds on land provided by government could also be explored. The operator of the facility could then be selected via an Expression of Interest process with conditions relating to the operation of the facility specified in the EoI and in the contract with the successful respondent. The contract could be designed in a way where government would have some control over the operation of the facility during an emergency response.

8. Next steps in further exploring viable options to improve the truck wash network in Victoria.

Next steps are primarily captured in the conclusion section of the report (section 6) and include:

- After industry consultation, develop a guide to preferred truck wash design and washing practices, that includes minimum requirements for their operation and maintenance
  - further investigate any gaps in current industry practice including time taken to wash trucks relative to recognised good practice, the incidence of livestock transport vehicles washed at sites other than truck washes, the quality of these sites and their wastewater management
  - consider incentives and education including communications material for industry e.g. YouTube video(s) on 'best practice' truck loading, cleaning and biosecurity to raise the standard of truck wash facilities, truck washing practice and pre-loading practice by producers.
- Consideration of a further study on the feasibility and cost of establishing a dedicated effluent dump in the Greater Melbourne area to complement a future truck wash/effluent facility.
- A detailed checklist outlining the next logical steps in enabling the timely development of a new facility in proximity to Greater Melbourne. Next steps include further government agency and industry consultation as well as site option assessment and site-specific needs analysis, before applying for co-funding and the development of a suitable funding model for the preferred site.

Acknowledgments

RMCG is grateful for the assistance provided by:

- Department of Energy, Environment and Climate Action, Victoria
- Livestock Saleyards Association of Victoria (LSAV)
- Australian Livestock Saleyards Association (ALSA)
- Livestock and Rural Transporters Association of Victoria (LRTAV)
- Australian Meat Industry Council (AMIC)
- Victorian Farmers Federation (VFF)
- All survey participants
- Avdata Pty. Ltd.

The project was funded by the Victorian Cattle, Sheep and Goat, and Swine Compensation Funds through the *Livestock Biosecurity Funds Grant Program* which funds projects and programs that prevent, monitor, and control diseases, thereby enhancing animal health, biosecurity and market access for the benefit of Victorian cattle, sheep, goat, swine and honeybee industries.

ACKNOWLEDGEMENT TO COUNTRY

We acknowledge the Traditional Owners of the Country that we work on throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present, and we acknowledge emerging leaders. Moreover, we express gratitude for the knowledge and insight that Traditional Owners and other Aboriginal and Torres Strait Islander people contribute to our shared work in Australia.

We pay respects to all Aboriginal and Torres Strait Islander communities. We embrace the spirit of reconciliation, working towards self-determination, equity of outcomes, and an equal voice for Australia's First People.

1 Introduction

1.1 THIS PROJECT

The purpose of this project was to establish if there is a need for expanded or upgraded livestock truck wash services in Victoria. Truck washes for livestock transport vehicles have a role in maintaining biosecurity and food safety standards within Victoria's cattle, sheep, pig and goat industries. Industry participants who engage livestock transporters expect that stock crates and trailers are clean to reduce the spread of infectious diseases, to maximise the commercial value of livestock that are presented for sale at saleyards, and to minimise the risk of dirt, faeces and urine contaminating meat following slaughter. The industry is self-regulating, where producers and carriers perform a duty of care to maximise animal welfare and meat quality and minimise, as far as possible, biosecurity and effluent management risks during livestock transport.

The approach to the study was to access and analyse available data sources to develop a solid understanding of livestock transport movements in relation to the location of the existing truck wash network, its attributes and usage. This evidence base was augmented through consultation with industry representatives and key government agencies. These included discussions and surveys with saleyard operators, livestock carriers, abattoirs and government agencies, including Agriculture Victoria, Environmental Protection Authority, Roads Victoria and Greater Western Water.

The analysis also considered interstate road transport linkages between the Victorian livestock industry and NSW and SA regarding the movement of livestock between farms, saleyards and abattoirs.

In accordance with the project's **terms of reference**, the report addresses:

1. Relevant trends and prospects in livestock industries
2. Demand and need for truck washing services and gaps in existing network of facilities
3. Need for additional facilities: number, their location(s) and infrastructure requirements
4. Relevant Environment Protection Authority (EPA) guidelines and regulations on effluent management
5. Indicative current costs of constructing and operating a new facility
6. Likely steps needed to improve truck washing in the event of a disease outbreak (noting the difficulty in prescribing specific or effective requirements for the wide range of possible individual disease outbreaks)
7. A financial analysis of the capacity of a well-located new truck wash facility to be a profitable investment and self-supporting (or a commercial operation)
8. Next steps in further exploring viable options to improve the truck wash network in Victoria.

The approach was developed after research into the current services provided and designed around consultation with all main stakeholder groups to deliver outputs that were:

- Supported by key partners, i.e. truck wash operators, state agencies and livestock industry groups
- Factual, practical and targeted at intended audiences.

1.2 PROBLEM STATEMENT

This study seeks to establish the current capacity of Victoria's network of truck washes to meet the current and anticipated future needs of Victoria's livestock transport sector and other industry participants for services. The study also seeks to outline the issues related to future truck wash services' access and operations that will need to be considered in the event of an outbreak of an animal borne disease such as foot and mouth disease (FMD)[2].

A meaningful report into the needs of livestock transport operators to maintain clean vehicles requires an understanding of not only the location and utilisation of existing truck washes but also current livestock movements throughout (and into) Victoria and the trends in livestock movements that are emerging. For example, the number of livestock movements directly from farm to abattoir has increased as the number of livestock purchased from saleyards by meat processors has declined. Advice from industry is that this trend is likely to continue, and there will be a related impact on the location and viability of truck wash facilities since they have traditionally shared a site and been maintained and managed by regional saleyards.

A serious emergency disease outbreak (for example, FMD) would have a sudden and substantial impact on the livestock production and processing industries. Although it is difficult to be prescriptive about the emergency response strategy without naming the disease outbreak, the maintenance and assurance relating to the cleanliness of the livestock transport fleet will be a critical element of the successful response and recovery phase. A well-equipped, well-managed, carefully monitored and fully operational truck wash network located at critical locations, depending on the pathogen, is likely to be a key element of the containment and recovery actions needed.

Publicly accessible and commercial Victorian livestock truck wash facilities are nearly all located at saleyards. In some cases where saleyards are now closed, their truck wash remains in operation, e.g. Geelong and Warrnambool. The decentralisation of abattoirs based in metropolitan Melbourne (Brooklyn, Laverton, Dandenong etc.) has been long discussed but there is no indication that existing processing facilities will relocate in the foreseeable future. It is expected that as long as abattoirs remain relatively labour intensive operations these facilities will remain metropolitan based. Slaughter volumes go up and down according to factors around meat export markets and domestic livestock prices, but over the long term remain relatively stable. The Nov. 2022 ABS Labour Survey showed a significant growth in meat processing workers (largest quarterly jump since May 2007) coming off the back of the impacts of Covid-19 and there being cheaper livestock becoming available after a period of (unprecedented) high prices[3].

Eight livestock abattoirs (excluding poultry) are located in Greater Melbourne, and one in Geelong, and these facilities rely on off-site truck wash facilities. It was apparent from industry consultation that truck washing facilities at abattoirs were generally inadequate to service the truck washing needs of all livestock deliveries. There is a remarkable lack of publicly accessible truck wash facilities at or near the large metropolitan abattoirs in Melbourne's west, with the nearest wash facilities currently located at Geelong, Kyneton, Ballarat and Euroa. These sites are all between 60 and 160 km from the western Melbourne abattoirs on the radial highway network extending to the west, north and north-east of Melbourne.

Any reduction in available truck wash facilities, either through the closure of sites or limitations being placed on accessibility (e.g. reduced operating hours or limits on livestock transport size) of any of the state's most strategically located truck wash facilities could cause significant interruption, frustration and cost to transport service providers and industry participants more generally.

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[2] Genus Aphthovirus within the family Picornaviridae

[3] ABARES Meat processing labour. https://www.agriculture.gov.au/abares/research-topics/agricultural-outlook/meat-processing-labour#november-increase-in-meat-processing-labour-the-largest-since-2007

The truck wash, owned and operated by the City of Greater Geelong, has the closest proximity to the abattoirs in western Melbourne, and its continued operation has been under review since the Geelong saleyards closed in 2017. If the truck wash is closed in the future, the nearest truck wash facility for transport carriers originating in the southwest of the state is Colac; in the order of 140 km from the largest abattoirs operating in western Melbourne.

By far, the largest pig abattoir is in western Melbourne (processing 84% of Victoria's pigs) and noting that pigs are highly susceptible to disease (African Swine Fever, porcine epidemic diarrhea virus and FMD are major threats. The pig industry arguably requires a higher level of biosecurity measures than other livestock classes. Importantly, thorough truck washing is only one measure to mitigate the relatively higher transmissible disease risks associated with pigs.

The study area is Victoria-wide (Figure 1-1) however, the authors acknowledge that demand for a wash facility reduces with increasing distance from the highway network used by livestock transport vehicles and location of abattoirs, which are generally 'hot spot' destinations for livestock bred for meat processing.

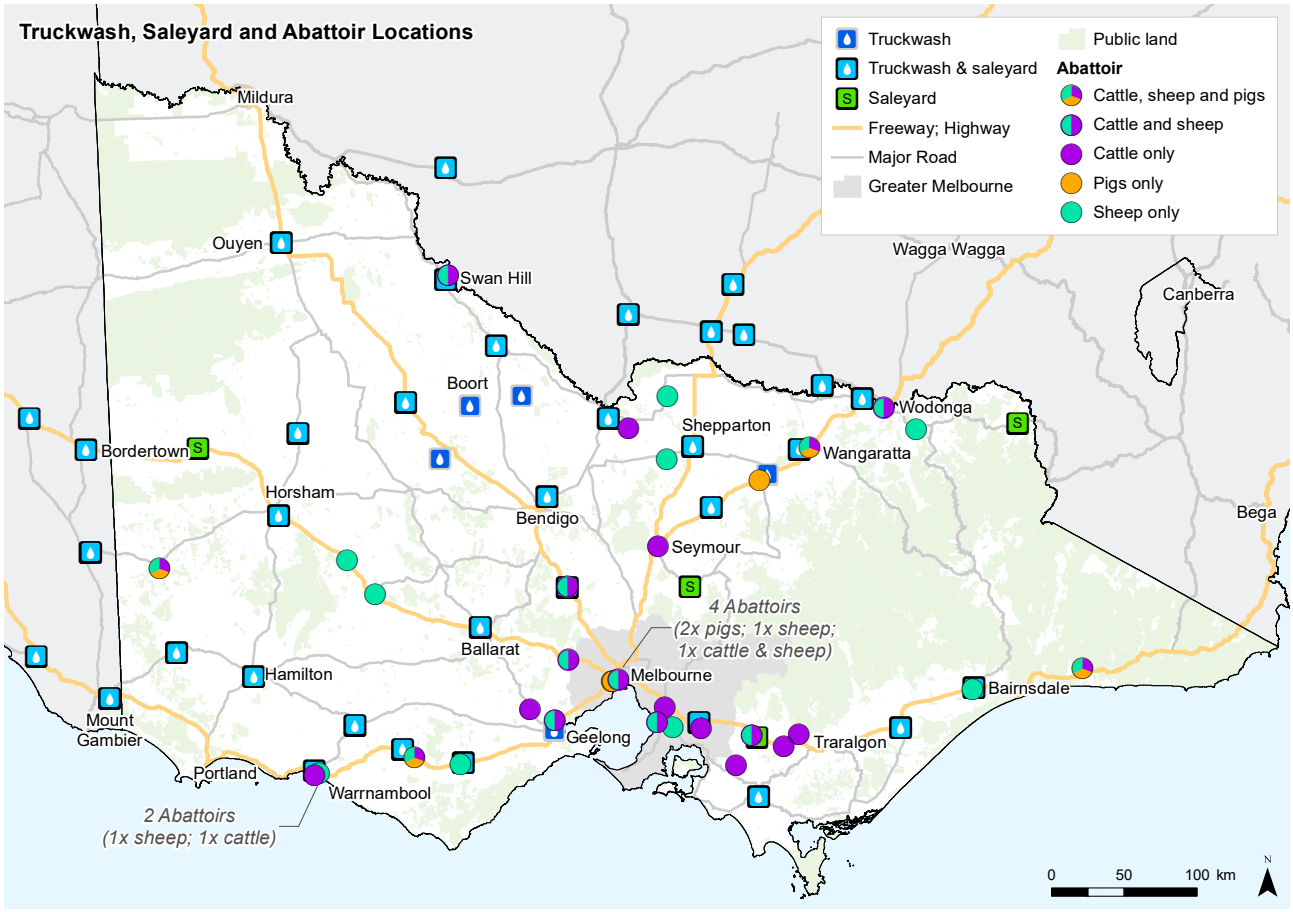


Figure 1-1: Location of truck wash facilities, meat processing/abattoirs and major roads, Victoria

[Draft note: Mapping is not showing all truck wash locations/obscured by abattoir symbols so redraft for final]

1.3 PROJECT METHOD AND SCOPE

The methodology adopted by RMCG in preparing this report was to:

1. Work in close collaboration with industry to understand the current status of the truck wash network:
   - consultation was focused on collecting information, data and views from a range of livestock related peak bodies, agencies, large transport operators, saleyard operators, abattoirs, scientists/vets and

other groups with an interest in the future access and success of a state-wide network of fit-for-purpose truck wash facilities. The engagement was through direct one on one and group discussions and circulation of industry surveys.

2. Review the most current and relevant information and data sources on livestock production and processing, livestock movements and truck wash usage; including:
   - reviewing relevant literature in relation to previous studies, industry codes of practice and legislation
   - accessing data from a range of sources, including ABS on livestock production and processing, NLIS livestock movements (source and destination) data from Agriculture Victoria, Avdata[4] on truck wash utilisation (for sites where operator permission was secured)
   - establishing current and optimum stock movements and truck wash utilisation rates (e.g. stockyard operators, abattoir operators, Avdata for each facility, aggregated/de-identified NLIS data on stock movements); this will assist in understanding the livestock stock transport task throughout Victoria, current utilisation of truck washes, and movement patterns to and from farms, saleyards and abattoirs. When combined, this will provide an additional evidence base to identify demand for truck wash facilities and possible 'hot-spots' or gaps in service warranting new or upgraded facilities.
3. Review current regulatory and legislative requirements on livestock movements. Understand current truck wash operation and design and outline any current and emerging requirements in relation to transport hygiene and truck washing requirements identified during consultation and through site visits.
4. Liaise with EPA and biosecurity authorities and industry groups to confirm minimum standards (documented or simply practiced, where available) in relation to wastewater management and addressing disease outbreak issues related to management of effluent from truck wash sites and the potential or not for the re-use of wastewater in truck washing.
5. Surveys of:
   - saleyard/truck wash operators covering design and operational features of each wash, usage intensity, congestion, site operations, wastewater management and future intentions
   - livestock transport carriers requesting an assessment and feedback on the truck wash network from a user's point of view.
6. Site visits:
   - to several truck washes to collect design and costing information, and other insights on access, coordination, design, management and use
   - to confirm the costs of owning, operating and maintaining facilities and the likely annual income derived from a range of fees charged
   - included sites both representative and, in one case, a model new facility to ensure the study had a firm basis underpinning later assumptions regarding the design and cost of new or upgraded facilities, as identified as likely to be required
7. Analysis:
   - when combined, the data and information provided an evidence base to identify demand and the likely cost in 2023 dollars for additional truck wash facilities to fill or augment possible 'hot-spots' or gaps in service
8. High level concept design and cost model
   - concept design for a facility to be constructed (or re-built) at the identified site of greatest need
   - cost (May 2023) for required civil works, required wastewater treatment/connections, and design including an outline of the site's capacity for upgrades (to enable rapid increase in cleaning service/standard throughout in the event of a disease outbreak), truck-wash construction, commissioning and operation of a facility

[4] Avdata Pty. Ltd provides operations and revenue collection services to truck wash facilities.

- costing excluded site purchase or lease costs (noting that the procurement of a site of suitable size and the upgrade of road access to a new facility in a suitable location is likely to be a significant cost issue that is not included in the report
- financial modelling, including cost and income base for new and/or upgraded facility(s), including a range of options for covering set up (capital) cost, operating, staffing and financial returns.
  - noting that a definitive design guide for 'future Victorian truck wash facilities' is not an output of this project but could be part of a future study.

9. Preparedness for the future:
   - recognising the complexity in providing a recommendation that is all-encompassing in terms of the appropriate response to each possible disease type, confirm potential steps to upgrade facilities to address pathogen specific challenges during a livestock borne contagious disease outbreak, including dry/heat cleaning, vehicle and driver isolation, and the introduction of portable/mobile truck wash units.
10. Reporting:
    - a draft report was provided to the steering committee and Agriculture Victoria for feedback, and based on a consolidated response, RMCG provided a final report
    - the report includes recommendations on next steps toward improving truck wash facilities in Victoria.

A definitive design guide for 'truck wash facilities' was not an output of the study, but rather, observations were made of current design and practice in newer facilities that could meet minimum standards for truck washes based on current industry expectations regarding biosecurity, meat hygiene, responsible effluent management and other matters. The study team was fortunate to be able to visit and meet with the operators of several modern, thoughtfully designed, and well-utilised facilities.

2 Current situation

2.1 SNAPSHOT – VICTORIAN LIVESTOCK INDUSTRY

The livestock industry makes a substantial contribution to Victoria's economy (Figure 2-1).

Operating an efficient, cost-effective and clean fleet of livestock transport vehicles is a key component of maintaining a profitable and disease-free livestock industry that meets the needs of livestock producers and Victoria's large domestic and export meat processing sector.

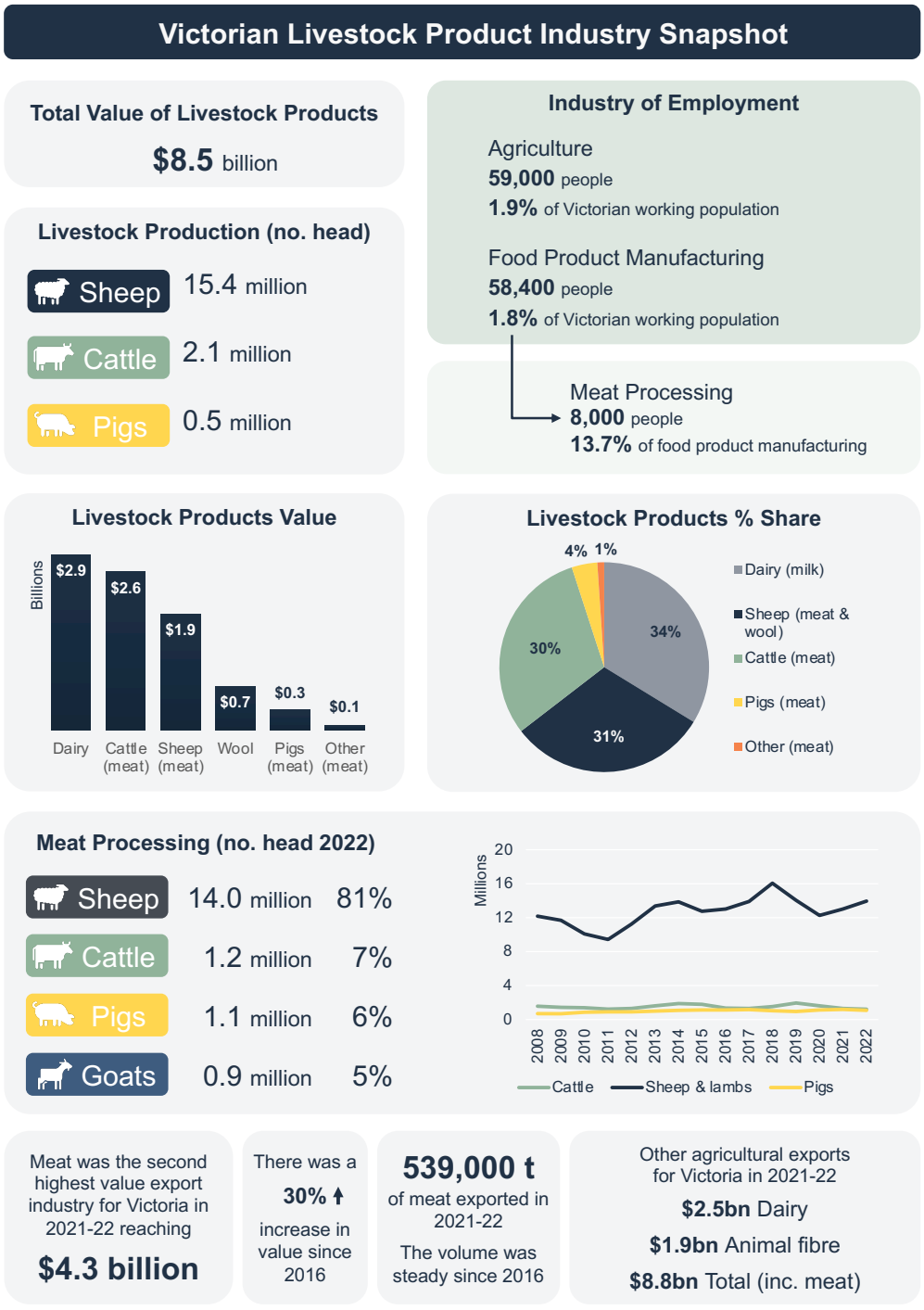


Figure 2-1: Statistics on aspects of the Victorian livestock industry

Source: ABS 2020-21, Statistical Research Department 2023, Victorian food and fibre performance report 2021-22

2.2 LIVESTOCK MOVEMENTS

REGULATION

The National Livestock Identification System (NLIS) for cattle, sheep, goats and pigs is Australia's system for identifying and tracking these species for disease control, food safety and market access purposes.

A Property Identification Code (PIC) is the eight-character alphanumeric code allocated to each livestock producing property by Agriculture Victoria.

> *In the event of a foot-and-mouth disease detection[5] anywhere in Australia, authorities will implement a national livestock standstill, meaning movement of any livestock anywhere in Australia would be prohibited for a minimum of 72 hours (Agriculture Victoria).*

In Victoria, it is understood that this would be administered through a Control Order under the Livestock Disease Control Act 1994 and when a livestock standstill is announced the regulations must be followed and penalties would be applied to anyone breaching the restrictions[6]. A permit system, however, is likely to operate allowing the movement of livestock in limited circumstances where the risk of disease transmission has been assessed as minimal.

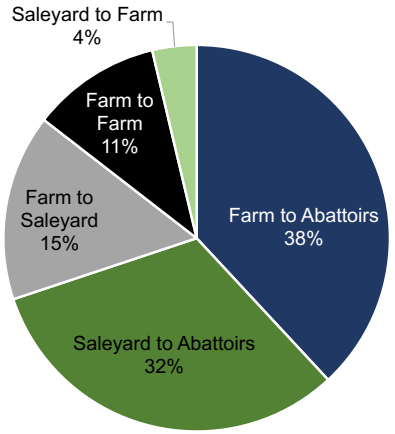
LIVESTOCK MOVEMENTS SUMMARY DATA

There was in the order of 2 million sheep, cattle or pigs either originating within or outside Victoria delivered to locations within Victoria during September 2022. NLIS tag movements data for number of head is shown in Table 2-1. The data was collated according to five movement types.

Table 2-1: Representative livestock movements in Victoria

Movement type	All livestock	% of movements
Farm to Saleyard**	303,468	16%
Farm to Abattoirs	740,619	38%
Farm to Farm	210,132	11%
Saleyard to Farm	71,942	4%
Saleyard to Abattoirs	618,252	32%
Total	**1,944,413**	**100%**

(Source: September 2022, NLIS data base Agriculture Victoria)



This provides a snapshot only of overall livestock movements and may not be a full picture of all movements. For example, not all movements from some saleyards outside Victoria (SA and NSW) delivering to Victorian abattoirs are included in this data set and, while mandatory, farm to farm movements could to some extent be under reported.

Across all livestock categories, direct transfer of livestock from farm to abattoirs was the most common (38%), followed by saleyard to abattoirs (32%). The smallest number of movements occurred from saleyards to farms (4%). Based on advice from industry sources, including saleyards operators, the proportion of livestock movements directly to abattoirs from farms, effectively by-passing saleyards, is increasing. Trading of both prime and store livestock through on-line selling platforms such as Auctions Plus is also increasing.

[5] Presumably similar measures would apply following outbreaks of many other exotic diseases.
[6] Agriculture website: https://agriculture.vic.gov.au/biosecurity/animal-diseases/foot-and-mouth-disease/livestock-standstill

A representation of the proportion of each livestock category by movement type is illustrated in Figure 2-2.

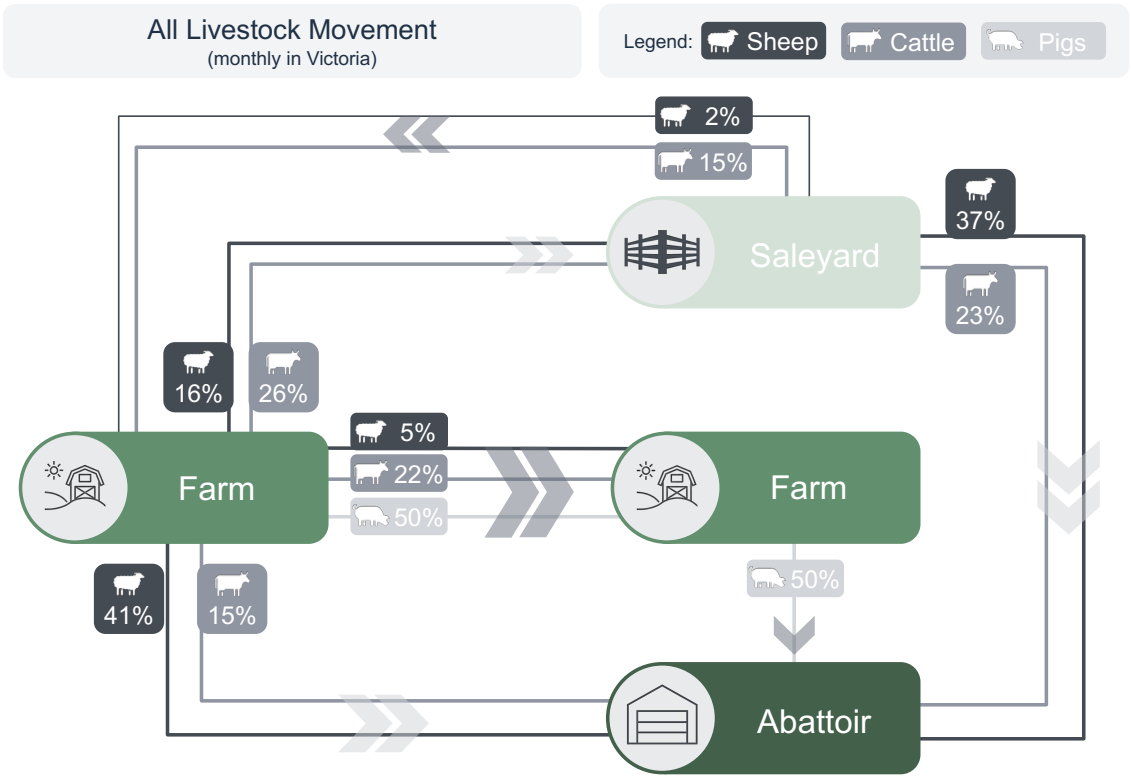


Figure 2-2: Representative livestock movements in Victoria, September 2022

For example, 50% of pig movements were farm to farm mainly in vertically integrated businesses where ownership does not change (and most of the remaining 50% are farm to abattoirs) compared with only 5% of sheep movements being farm to farm. Most sheep movements were either farm to abattoirs or saleyard to abattoirs. As expected, cattle movement types were more mixed.

These movements are likely to be a reasonable representation of the month of September in any given year, however, there is likely to be seasonal differences in some types of livestock movements, for example, the movement of store lambs and breeding sheep from saleyards to farms would be higher during the late Summer-Autumn months.

In addition, approximately 505,000 sheep and almost 44,000 cattle were transferred from Tasmania to Victoria in 2022 (NLIS data base). Victorian abattoirs also process in the order of 850,000 goats per year, with a large majority sourced from rangelands in NSW and SA.

Extrapolating from the movement data reported in September 2022, there are likely to be in the order of 20 to 25 million sheep, goat, cattle and pig movements per annum in Victoria.

Data on the breakdown of movement types for each livestock category is summarised in Tables 2-2, 2-3 and 2-4.

Table 2-2: Monthly movements of sheep

Movement type	Sheep	% of movements
Farm to Saleyard	236,102	16%
Farm to Abattoirs	618,167	41%
Farm to Farm[7]	71,697	5%
Saleyard to Farm	32,220	2%
Saleyard to Abattoirs	558,889	37%
Total	1,517,075	100%

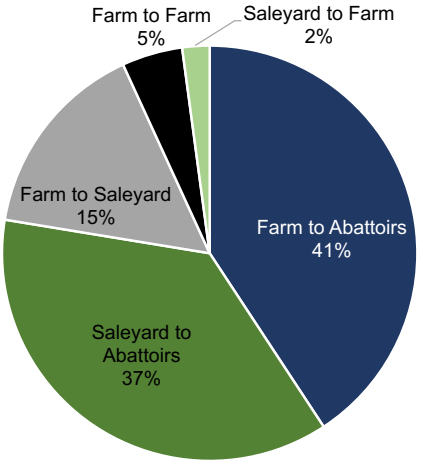


Table 2-3: Monthly movements of cattle

Movement type	Cattle	% of movements
Farm to Saleyard	67,366	26%
Farm to Abattoirs	38,483	15%
Farm to Farm	57,025	22%
Saleyard to Farm	39,722	15%
Saleyard to Abattoirs	59,363	23%
Total	261,959	100%

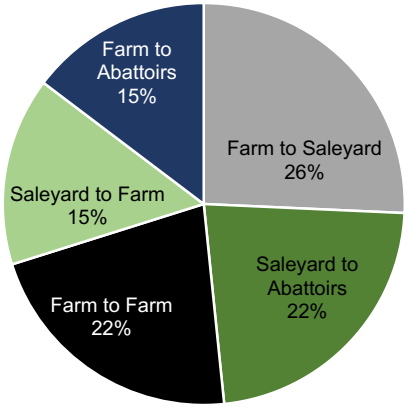
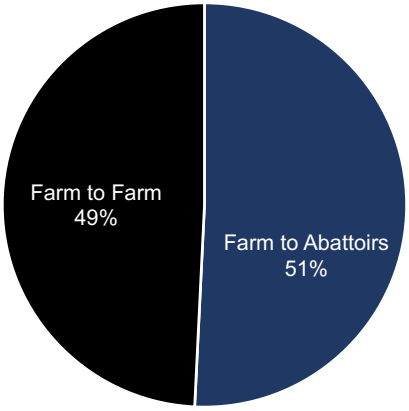


Table 2-4: Monthly movements of pigs

Movement type	Pigs	% of movements
Farm to Abattoirs	83,969	51%
Farm to Farm	81,410	49%
Total	165,379	100%



LIVESTOCK PICK UP / SOURCE HEATMAPS

Maps showing pick-up points from farms and saleyards to deliver livestock to Victorian based abattoirs over the month of September 2022 are provided in Figure 2-3 (sheep), Figure 2-4 (cattle) and Figure 2-5 (pigs).

[7] Farm to Farm movements include feedlots

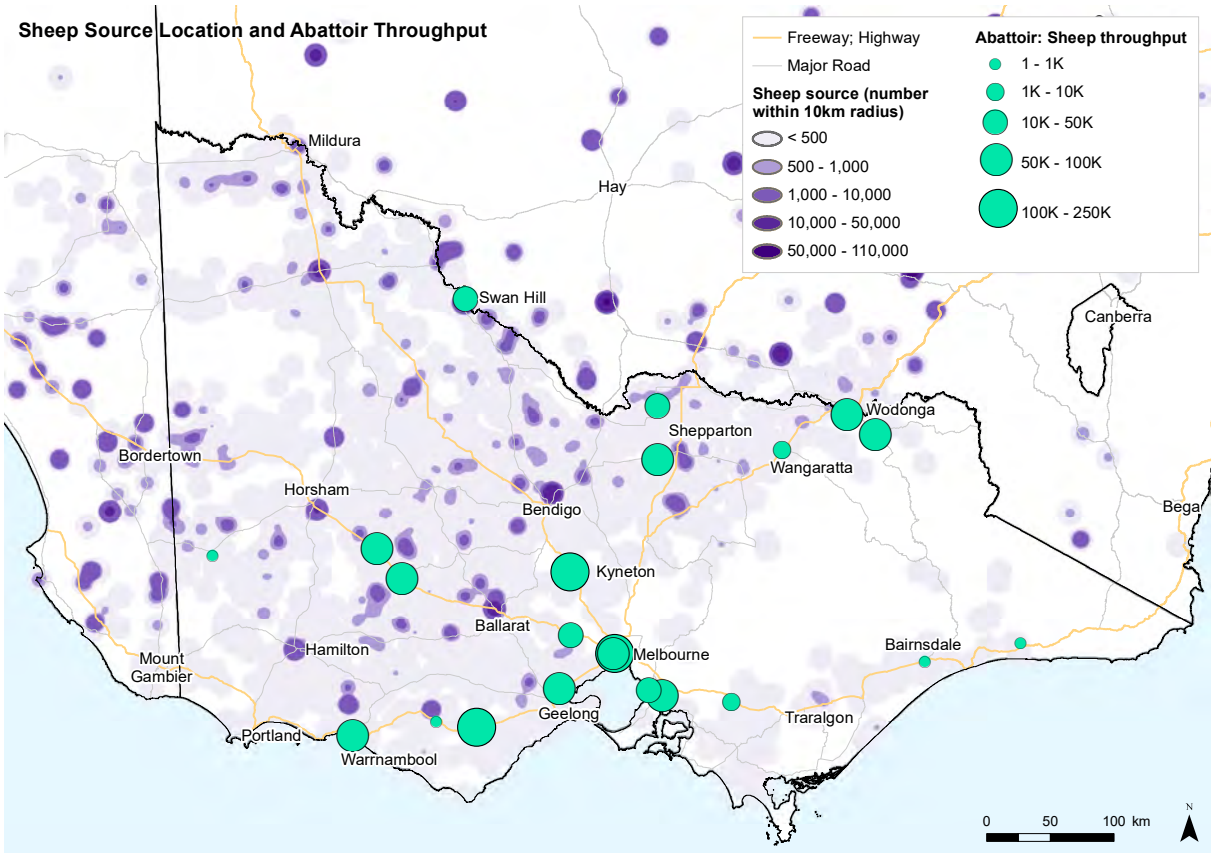


Figure 2-3: Sheep and lambs pick up points (farms/saleyards) delivered to Victorian abattoirs – September 2022

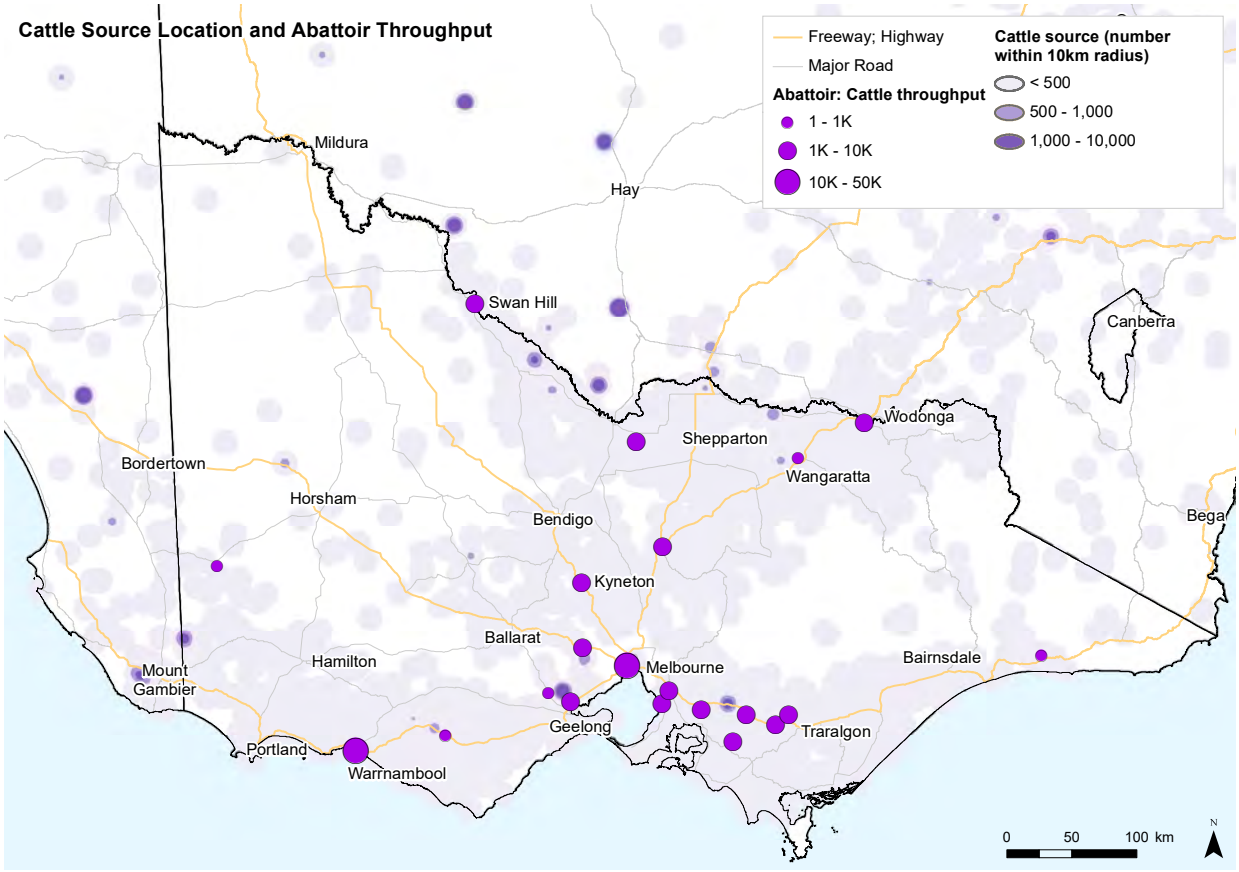


Figure 2-4: Cattle pick up points delivered to Victorian abattoirs – September 2022

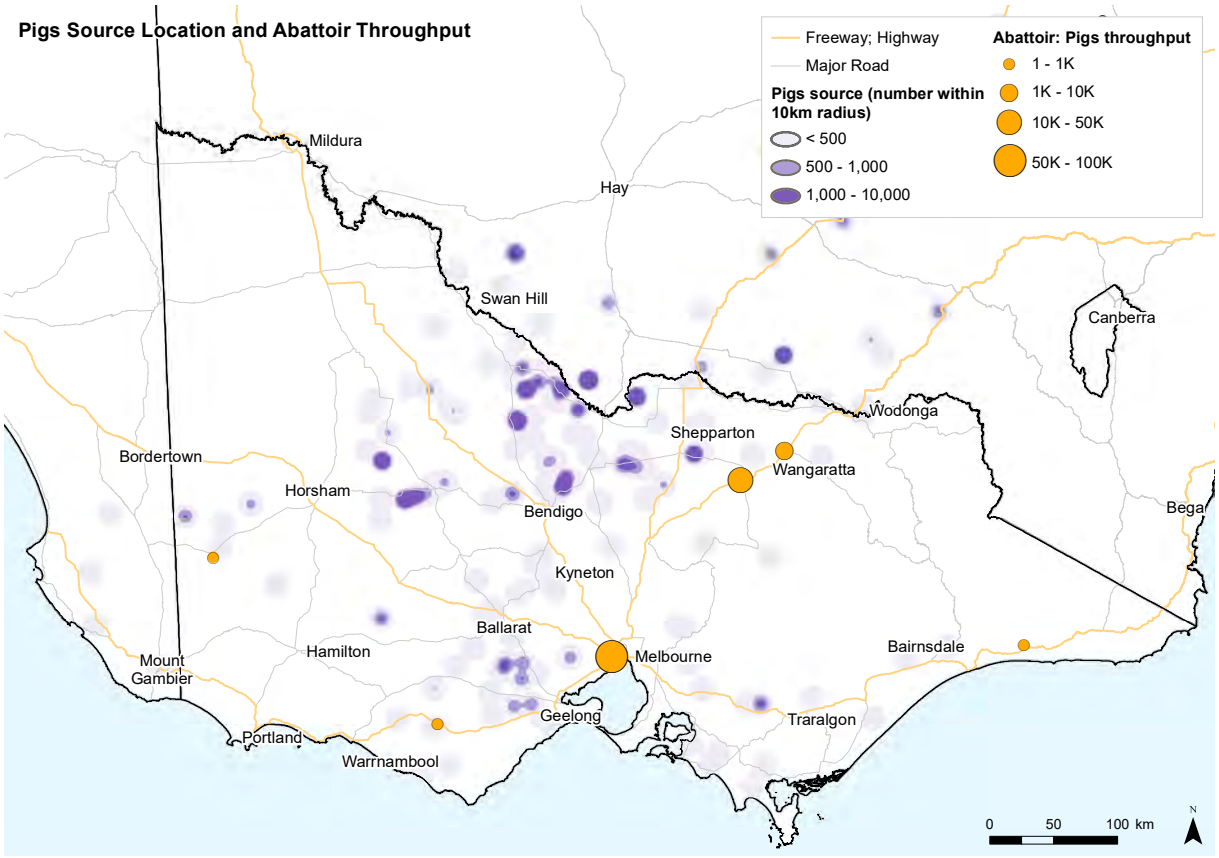


Figure 2-5: Pigs pick up points (farms only) delivered to Victorian abattoirs – September 2022

Of note is that some livestock within all four livestock categories were transported large distances from both within Victoria and interstate to Victorian abattoirs. The mapping reflects that livestock production is highly dispensed with more concentrated pockets of production spread throughout the larger tri-state area. Animals can travel long distances to be processed in locations closer to customers, markets and export points. Livestock are also shipped then transported by road for processing from Tasmania.

2.3 ENVIRONMENTAL LAWS

This chapter provides some commentary on the key local operating environmental factors relevant to this study. This section relates to environmental laws and management, and the following section addresses road rules and planning relevant to livestock carriers and large vehicle access.

The civil engineering requirements for truck wash facilities (concrete bays, capacity for high pressure and high-volume water supply, screening, bunding, approach roads, signage, payment systems, etc) are all relatively well-understood and can be “dropped-in” as standard components to any site. The source of water used to wash vehicles, and the treatment and end use of the effluent washed from trucks, however, varies widely from site-to-site.

Truck washes are almost always co-located with either a saleyard or an abattoir, and so have the advantage of being able to integrate their environmental management.

Key environmental management considerations include:

- Wastewater (liquid manure) management
- Solid (solid manure) management
- Noise and odour.

In Victoria, the Environment Protection Authority (EPA) works to protect the environment and human health from the impacts of pollution and waste by:

- Using public reporting and environmental monitoring to assess the state of the environment
- Using environmental standards in policies, regulation and guidelines
- Assessing and approving activities and premises to make sure they meet environmental standards
- Making sure businesses and community comply with the law.

The new Environment Protection Act 2017 and Regulations provide a framework[8] against which all activities are assessed. The general environmental duty (GED) is a centrepiece of the laws and applies to all Victorians. If a person conducts activities that pose a risk to human health and the environment, they must understand those risks and must take reasonably practicable steps to eliminate or minimise them. The GED is criminally enforceable.

Where truck wash effluent can be discharged as a "trade waste" to a municipal wastewater system operated by a Victorian water corporation, then the truck wash wastewater management is relatively straightforward. In a trade waste situation, the wastewater management is covered under a trade waste customer agreement between the operator and the relevant water corporation. The site management would focus on pre-treatment of the effluent to reach the desired trade waste acceptance criteria before pumping the wastewater to a town sewerage system.

In the absence of town sewerage, the management scheme for liquid and solid manure must be designed for sustainable land application or evaporation of the effluent to suit the local conditions. Conditions can be highly variable due to factors such as: climate, topography, soils, (changing) neighbouring land uses, opportunities for beneficial uses for the treated effluent to irrigate crops and pastures, sensitive receptors, etc. Whether the manure contains sewage and other waste of human origin is an important consideration that determines how wastes are classified and the risks associated with various end-uses. This discussion addresses truck wash waste streams that are assumed not to contain sewage.

For solid and liquid effluent management there can be a range of regulatory permissions and guidance including:

- Whether wastewater facilities for truck washes would need to be licensed by EPA or may be exempt from licensing needs to be considered on a site-by-site basis. In some cases, a development license and / or an operating licence may be necessary.
- Under Schedule 1 the Environment Protection Regulations 2021, (*Prescribed permission activities and fees*) there is no activity that matches "truck wash", but activities B02a and B02b provide for "livestock saleyards or holding pens" which appears to be an appropriate classification for truck washes. Under the schedule, if the throughput is more than 10,000 animal units per year, these activities are a "prescribed development" (meaning a new facility would require a development licence) and depending on whether the wastes are discharged solely to land, either require an operating permit or operating licence.
- Clause 25 of the Environment Protection Act 2017 sets out the specific requirements of the general environmental duty, Subsection 25 (4) requires that a person, so far as reasonably practicable, must:
  - use and maintain plant, equipment, processes and systems in a manner that minimises risks of harm to human health and the environment from pollution and waste;
  - use and maintain systems for identification, assessment and control of risks of harm to human health and the environment from pollution and waste that may arise in connection with the activity and for the evaluation of the effectiveness of controls;

[8] https://www.epa.vic.gov.au/about-epa/laws/laws-to-protect-the-environment-and-human-health/environmental-laws-for-all-victorians

  - use and maintain adequate systems to ensure that if a risk of harm to human health or the environment from pollution or waste were to eventuate, its harmful effects would be minimised;
  - ensure that all substances are handled, stored, used or transported in a manner that minimises risks of harm to human health and the environment from pollution and waste;
  - provide information, instruction, supervision and training to any person engaging in the activity to enable those persons to comply with the duty under subsection (1).
- The principles of EPA Publication 2006 June 2021, "*How to comply with the livestock manure and effluent determination*", are likely to apply where a small-scale truck wash facility sends manure to a site for land application.
- Very small-scale operations (where the daily volume of wastewater is less than 5000 L/day) not connected to sewerage may be assessed against guidelines aimed at onsite wastewater management (e.g. 891.4: *Code of practice – onsite wastewater management*), but these guidelines really relate to wastewater from domestic dwellings, and in any case, most – if not all – truck washes are larger scale than 5 kL/day.
- For larger sites, EPA Publication 1910.2, "*Victorian guideline for water recycling"* sets out clear guidance for the safe and sustainable use of recycled water in Victoria for suppliers, managers and users of treated wastewater. This guideline also outlines the Victorian regulatory process and requirements for water recycling for wastewater suppliers and managers, such as water corporations, producers of industrial wastewater and those seeking to utilise recycled water as a resource. EPA Publication 1911.2 "*Technical information for the Victorian guideline for water recycling*" will also be relevant to larger scale sites.
- For sites that process manure and / or mortalities via composting, EPA Publication 1588.1: "*Designing, constructing and operating composting facilities*" is also relevant.
- In the event of a disease outbreak, it is likely any current formal or informal arrangements for the removal of solid semi-dry waste for truck wash sites may, depending on the pathogen, need to be (at least) temporarily suspended.

In summary, truck washes generate waste (liquid manure and solid manure), and operators must comply with environmental laws. Where the wastes can be responsibly transferred to a licensed operator (e.g. a water authority or a licensed composting facility), the truck wash operator may not need to hold a license or permissions, but they must always observe their general environmental duty, including maintaining equipment, assessing the environmental risks and implementing appropriate controls, development and maintenance of adequate systems, work procedures and staff training.

In most cases, truck washes are integrated with a larger activity (being a saleyard or abattoir) for which waste and environmental compliance, permissions and management requirements are set out clearly in the environmental legislation.

2.4 ROAD AND PLANNING LAWS

Truck wash operation cuts across different regulatory areas. Many of these are standard and relatively easily understood (such as Department of Transport and Council requirements for large vehicle access, laws about dropping materials onto roadways, town planning approvals for the relevant zones/overlays, and facility OH&S requirements).

Livestock transport carriers

All transportation of livestock into and within Victoria must comply with the *Australian Animal Welfare Standards and Guidelines: Transport of Livestock Edition one, Version 1.1, 21 September 2012*, Animal Health Australia. The standards are commonly referred to as the *Land Transport Standards* prescribed (5 March

2013) by reference to enforceable regulations under the *Victorian Livestock Management Act 2010.* The Act encourages livestock operators to demonstrate compliance with the Standards through participation in approved industry Quality Assurance programs.

Washing livestock transport vehicles (stock trailers/crates) between loads is considered best practice for reducing the risk of disease spread[9]. However, of note is that the regularity of livestock carriers washing down their trailers is not legislated in Victoria. Instead, the industry is self-regulating in this regard where stakeholders through peak industry groups, e.g. VFF, ALSA, AMIC, LSAV, LRTAV, provide information and support to transporters to operate with a duty of care regarding mitigating animal welfare, meat quality, biosecurity and effluent management risks.

Abattoir operators and many livestock producers demand clean trailers, which in the case of a number of producers interviewed, are visually inspected prior to loading stock. Some producers also demand that trucks are free of the same species for 24 hours prior to pick up (particularly pig producers).

A registered Industry Code of Practice under Section 706 of Heavy Vehicle National (HVN) law, National Heavy Vehicle Regulator (NHVR), *Managing Effluent in the Livestock Supply Chain* was developed in conjunction with Australian Livestock and Rural Transporters Association, and published in 2022.

The Effluent Code outlines practices for minimising the risks of livestock effluent loss during transit. Larger livestock crates contain effluent tanks that need to be regularly emptied to minimise spillage. It focuses on measures to eliminate or minimise the risks of livestock effluent loss into a road corridor and does not cover on-farm livestock waste risk management. Loss of livestock effluent from a heavy vehicle can be treated as a load restraint breach under the HVN law, acknowledging however, that the transport vehicle operator has no control over the amount of effluent that will be generated during transport. This is managed by off-road parties during the period before livestock are loaded, and also reliant on the availability of effluent disposal facilities at drop off points. Activities and controls are outlined in the Code.

There is also a national guide to the pre-transport selection and management of livestock[10], developed by Meat and Livestock Australia (MLA) and endorsed by state agencies and industry groups. The guide outlines the responsibilities for the ‘person in charge’ of animals during the different stages of the transfer process. It covers preparing animals for transport, load densities and managing effluent.

2.5 PREVIOUS STUDIES

Truck wash feasibility and design

A 2021 *Livestock Truck Wash Options Analysis* report[11] prepared for the Greater City of Geelong concluded that a relocated facility was not commercially viable without a subsidy from Council. The reliance on a single revenue stream (truck washdown) was deemed too low to attract a commercial investor in a new site.

Growth in revenue had stagnated and usage of the truck wash was heavily reliant on a few select customers i.e. 10 “super users” contributing 80% to revenue. The facility had consistently operated at a loss for the preceding four years. The revenue generated from the facility was found to cover only 25% of the operating expenses and it was proposed that if the single revenue stream from washdown services could not be altered by bringing in additional or alternate revenue streams with a higher margin, then its operation would remain unprofitable.

[9] Livestock Industry Consultative Committee. Meeting No. 2020-1. Agriculture Victoria 18/6/2020.

[10] MLA, 2019, Is this animal fit to load? A national guide to the pre-transport selection and management of livestock.

[11] KPMG, 2021, Livestock truck wash options analysis and recommendation. City of Greater Geelong, Final Report 7 September 2021

The study concluded that higher usage alone would not result in a financially sustainable truck wash operation in the Geelong area. The wash service fee at the Geelong site was $1.00/minute, and a breakeven price of $2.00/minute was suggested[12]. The survey of truck wash operators and users as part of this study indicated that wash charges were as high as $1.98/minute, with the majority charging between $0.90 and $1.50/minute.

Of note was that based on consultation with livestock carriers, the Geelong study concluded that a new or improved truck wash service was unlikely to increase usage, and there was a low appetite to pay more for the service. There had been a declining trend in usage of the Geelong site since 2019, and this has continued (refer to Geelong Case study, Appendix 1).

The reasoning for this finding was unclear in the Geelong report.

Despite their overall finding that a new and improved facility would not attract additional use, the report also noted that some commercial livestock carriers had indicated that closure of the Geelong site would result in detours off route and/or additional journey lengths and times to wash at alternative facilities (Colac, Kyneton, Ballarat and Mortlake).

Consultation for this current (RMCG) study indicated that there is currently substantial unmet demand for truck washing west and north of Greater Melbourne and that carriers were already paying more for truck washing services. This challenges the findings of the Geelong truck wash study.

An earlier 2010 feasibility study into the development of a new purpose-built truck wash in Greater Melbourne concluded that there was substantial unmet demand for a facility in close proximity to Melbourne. However, the construction of a new facility would require a substantial government or industry contribution (to capital) to make the proposal a commercially attractive operation.[13]

A strategic review of livestock truck washdown facilities in Tasmania aimed to identify priorities for the improvement of publicly accessible washdown infrastructure. The review provided the following high-level findings: [14]

- Clean trucks are an industry responsibility
- Production and containment of in-transport effluent needs tighter control
- There is unmet demand for publicly accessible wash facilities in Tasmania
- Improved facilities will deliver additional benefits to biosecurity, including workplace health and safety outcomes.

A study into the future of the Corryong Saleyards[15] included a review of the financial performance of both the saleyards and truck wash operations and found that the truck wash represented only a small portion of the income and expenses for the site (~10%). However, variable costs to operate the truck wash exceeded annual revenue by around 50%. It had a very low throughput of less than 20 trucks washed per week.

A water quality scoping study[16] of the water quality discharged from the Muchea (in WA) livestock truck wash aimed to inform future planning, design and construction of washes. It concluded that the minimum infrastructure required to satisfy maximum allowable limits for disposal in the sewage system included sieve

[12] At the time of writing (September 2023) it was reported by users that the wash fee at the Geelong facility had increased to $3.00/minute.

[13] AEC Group, 2012. Feasibility study for a livestock truck wash facility in the Greater Metropolitan area of Melbourne. Prepared for National Association of Saleyard Service Organisations.

[14] RDS Partners Pty. Ltd, 2016, A strategic review of livestock truck washdown facilities in Tasmania from a biosecurity and hygiene perspective. Prepared for Department of Primary Industries, Parks, Water and Environment.

[15] GHD, 2015, Corryong saleyards futures study. Prepared for Towong Shire Council.

[16] Department of Primary Industries and Regional Development, WA, 2020, Water quality study of the Muchea livestock truck wash. Resource management technical report 420, Natural Resources Research.

bend screens, an anaerobic or settling pond and a holding pond to ensure safety margins if sewer disposal was ever delayed.

A recently published (2021) *Truck Washes Information Guide*[17] provides guidance on 'recommended best practice' truck wash design, including:

- Site requirements, location and amenities
- Wastewater collection and disposal
- Wash facility attributes
- Regulatory compliance
- A pricing strategy to recover costs.

Truck wash biosecurity

A joint industry and Australian Government funded study[18] into research that would inform best practice truck biosecurity and disinfection guidelines with practical application at export pig abattoirs was published in 2022. It concluded that despite significant advances in biosecurity over the past 40 years, Australian biosecurity practices and adoption of biosecurity standards have a considerable 'way to go' when compared with European standards, for example.

The research identified an apparent lack of capacity and capability to effectively wash and disinfect Australia's livestock transport vehicles, and this will constrain Emergency Animal Disease (EAD) response activities and therefore increase the risk of spread to unaffected herds.

The study found:

- No objective data on the frequency or quality of cleaning and disinfection procedures of pig transport vehicles either on-farm or at abattoirs
- No export facilities provided truck disinfecting capability
- Trucks were washed after deliveries at export abattoirs at the driver's discretion.

The study concluded that the next steps included developing a best practice truck biosecurity and disinfection manual.

[Draft note: RMCG is unsure if this report or manual has now been finalised and is available to inform this review]

The AUSVETPLAN[19] Operational manual outlines the properties of the disease agents involved in EADs, the disinfectants and other methods available to inactivate them, and relevant decontamination procedures. The manual also includes control strategies for particular disease agents or groups of agents, however information on the role of truck washes in the containment of outbreaks and the lifting of livestock standstills is limited.

This study noted the information relevant to truck washing but did not undertake a detailed review or assessment of how these procedures could be adopted by operators and drivers using the existing truck wash network in Victoria during disease outbreaks.

[17] Transport for NSW, 2021, Truck washes information guide.
[18] APL, DAWE, 2022, Final Report APL Projects 2020/0005 & 2020/0005.01
[19] Animal Health Australia, 2022, Operational manual: Decontamination (version 5.0). Australian Veterinary Emergency Plan (AUSVETPLAN).

3 Existing truck wash network review

3.1 OVERVIEW

There are in the order of 32 operating truck washes in Victoria and border regions of NSW and SA. Figure 3-1 illustrates the coverage of the functioning truck wash network that is currently servicing the livestock industry. The regional and rural sites provide good coverage of livestock production areas.

Almost all current facilities are operated without regular attendant labour and that oversight for the truck wash in each case is provided as part of the operations of larger saleyard (or former saleyard) operations.

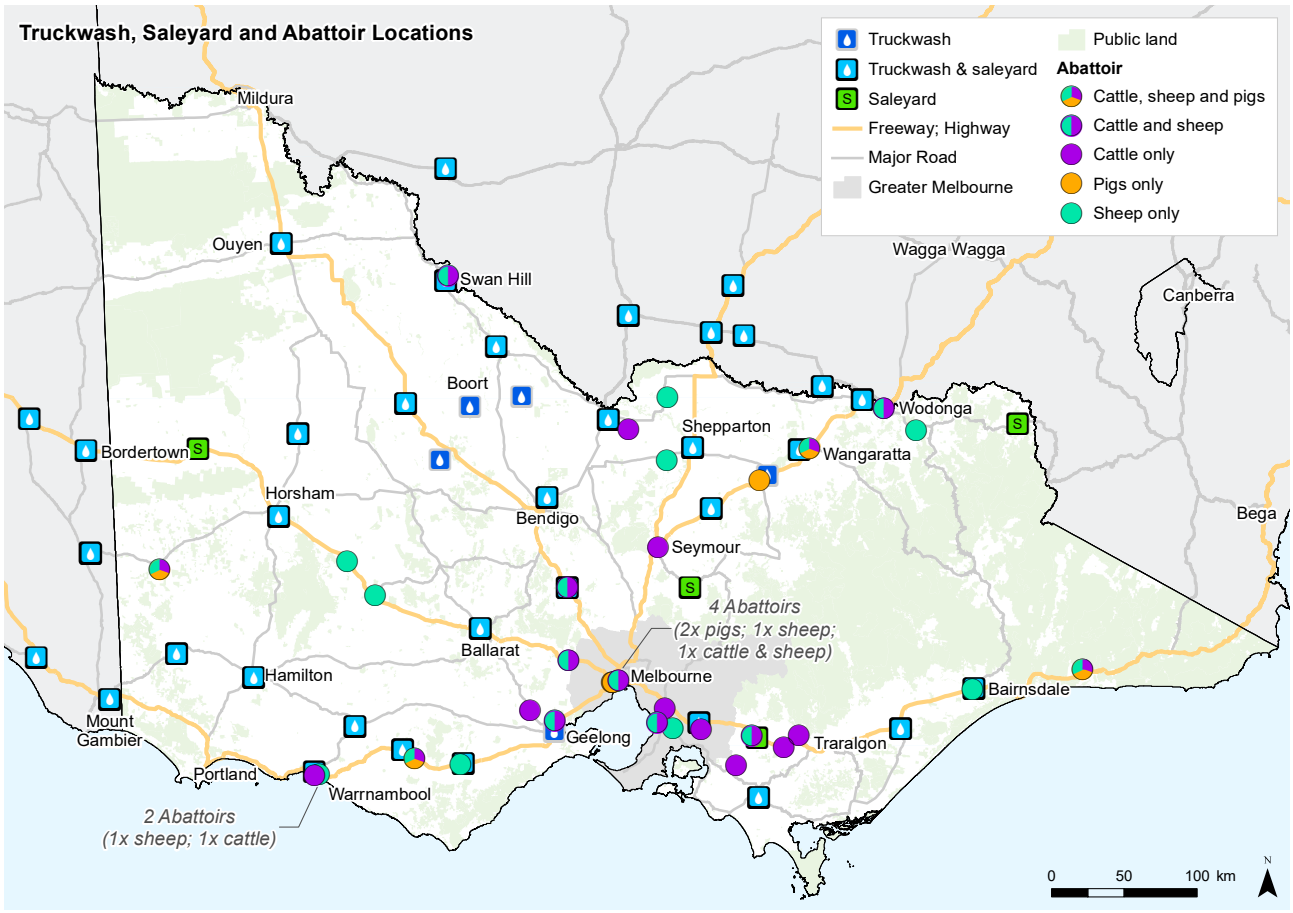


Figure 3-1: Extent of truck wash network in Victoria and border locations, and location of abattoirs in Victoria

[Draft note: Mapping is not showing all truck wash locations/obscured by abattoir symbols so redraft for final]

3.2 TRUCK WASH NETWORK STATUS AND USAGE

Two individual surveys were distributed by RMCG to ascertain feedback on the current status of the Victoria truck wash network.

1. **Saleyard and truck wash survey** – completed by saleyard operators
   - the saleyard and truck wash survey received responses from 25 sites, with good coverage achieved across Victoria
2. **Livestock transport operators' assessment** – completed by the Livestock Rural Transporters Association of Victoria (LRTAV)

- LRTAV rated 24 individual truck wash sites across Victoria according to six criteria:
  - water pressure and volume, water quality, slab slope, lighting, driver amenities, and access from highway.

Findings from both surveys are summarised below.

A selection of saleyard operators provided permission for RMCG to request access to their Avdata collected records of truck wash usage. The data received had been collated at a high level and deidentified for the past five years, i.e. 2018 to 2022. This data was used in conjunction with consultation with livestock transport operators (users) to determine the following:

- 'Busiest' sites in the network
- Busiest days in weeks and months of the year
- Usual hours of use (7 am till midnight)
- Trend in overall use (number of trucks, hours of use)
- Wash time per vehicle washed.

Saleyard operation

Saleyard size (no. head or transactions/year) ranged from 5,000 to 1,600,000 across the state. Saleyard operations were ranked based on their size:

- Less than 100,000 per year was regarded for the purposes of the survey as small
- 100,000 – 500,000 was medium
- Greater than 500,000 considered large.

A majority (60%) of saleyards indicated they had steady livestock numbers going through their facilities. One quarter indicated that numbers were falling, whilst the remainder were steady or growing. Saleyards grouped by size were compared against the trends reported within the saleyard operators survey. As shown in Figure 3-2, 40% of saleyards ranked as medium indicated that numbers were falling, with medium sized saleyards the most impacted by falling livestock numbers through their facilities. Small and large-sized saleyards were mostly reported as having either steady or growing throughput.

75% of saleyard operators indicated that the number of sale days being held was steady. 15% indicated the number of sale days held was falling.

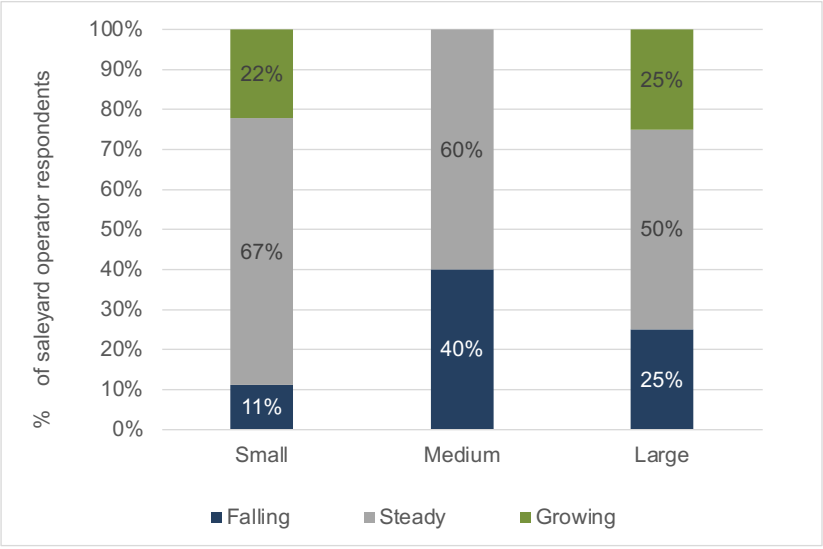


Figure 3-2: Trend in livestock numbers by size of saleyard

Features of truck washes

Almost all truck washes (95%) were reported to be more than 5 years old and almost half (45%) of facilities surveyed had two wash bays available, whilst 40% had three or more individual bays in operation. At multiple site bays, the separation of bays by a full-height wall or partition was unusual. Very few sites (three) had walled bays, and one had overhead shelter (Kyneton only), as illustrated in Figure 3-3.

Of the features available at facilities, only one truck wash facility (5%) reported that they had detergent on hand. None indicated that they had disinfectant, whilst only 10% had access to warm or hot water (Wycheproof). Approximately three-quarters of sites had access to toilets and showers/change rooms. However, it was noted that some of the showers/changerooms facilities were not adequate as they did not have female showers/changerooms or the capacity to properly isolate drivers (or those washing the vehicles) coming into or out of the facility.

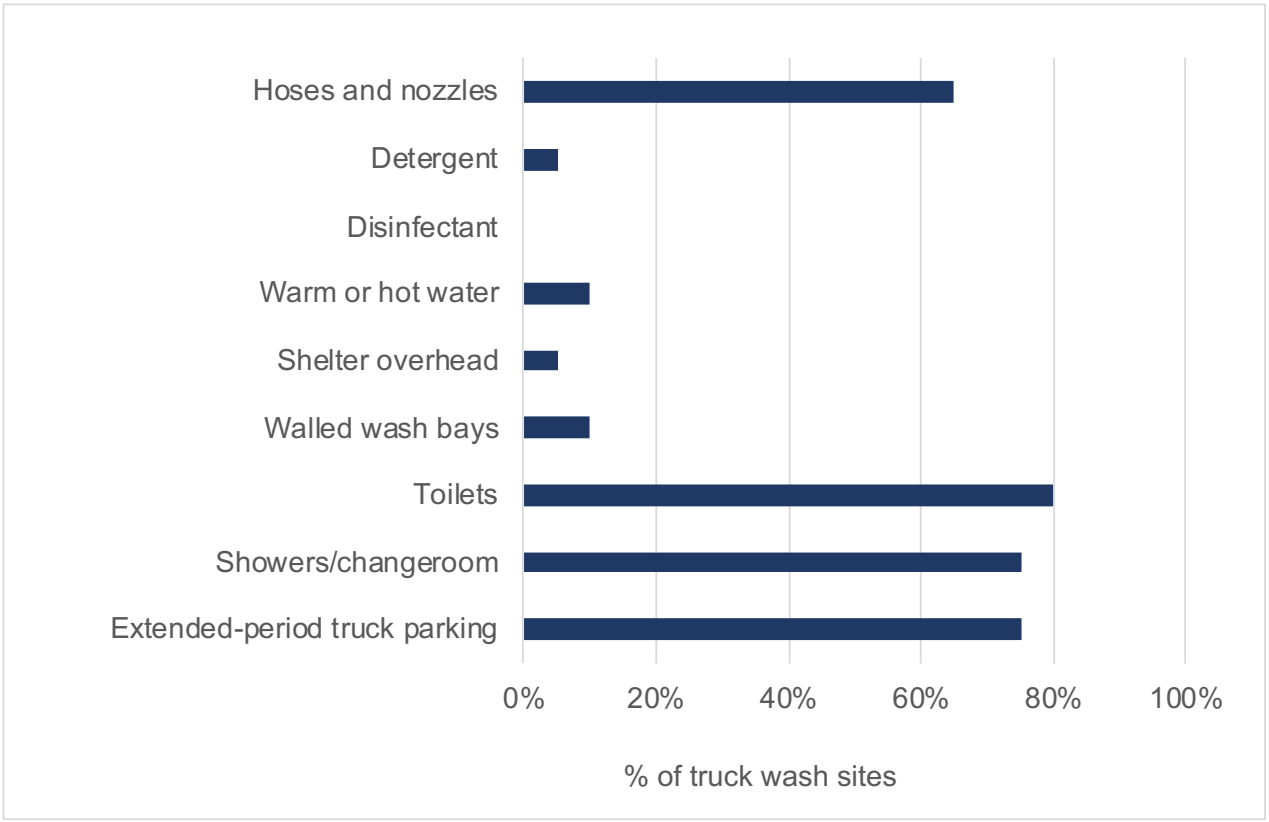


Figure 3-3: Features and facilities of surveyed truck wash sites

Town water was a water source used at 60% of truck washes surveyed. Other water sources widely used included rooftop capture (40% of sites), dam catchment (25%) and bore water (20%). Only one site (5%) used recycled truck wash water as a water source.

Water pressure was noted as low and inadequate for only one site (Kyneton), whilst the remainder were classified as medium or high-water pressure. Additionally, over 90% of sites reported that there was a good slab slope for easy muck removal i.e. a steeper slope enables easy, more effective and more rapid removal from both the trailer floor and the concrete slab of the truck wash.

The livestock transport operators' assessment reviewed individual characteristics of 24 truck wash sites across Victoria.

They rated the truck wash sites according to 6 criteria: water quality and pressure, slab slope, access, driver facilities, lighting and Avdata costs. An overall rating was also provided.

The transport operators were most concerned about water pressure and water quality, lighting and driver amenities features. The attributes in terms of the functionality of existing truck wash facilities were reported by users (and operators) to be mixed. While the majority were rated as satisfactory, the facilities at some sites were deemed to be inadequate by users' representatives (LRTAV). Appendix 1 provides case studies on the attributes of selected truck washes.

The average ratings of truck wash features is shown in Figure 3-4.

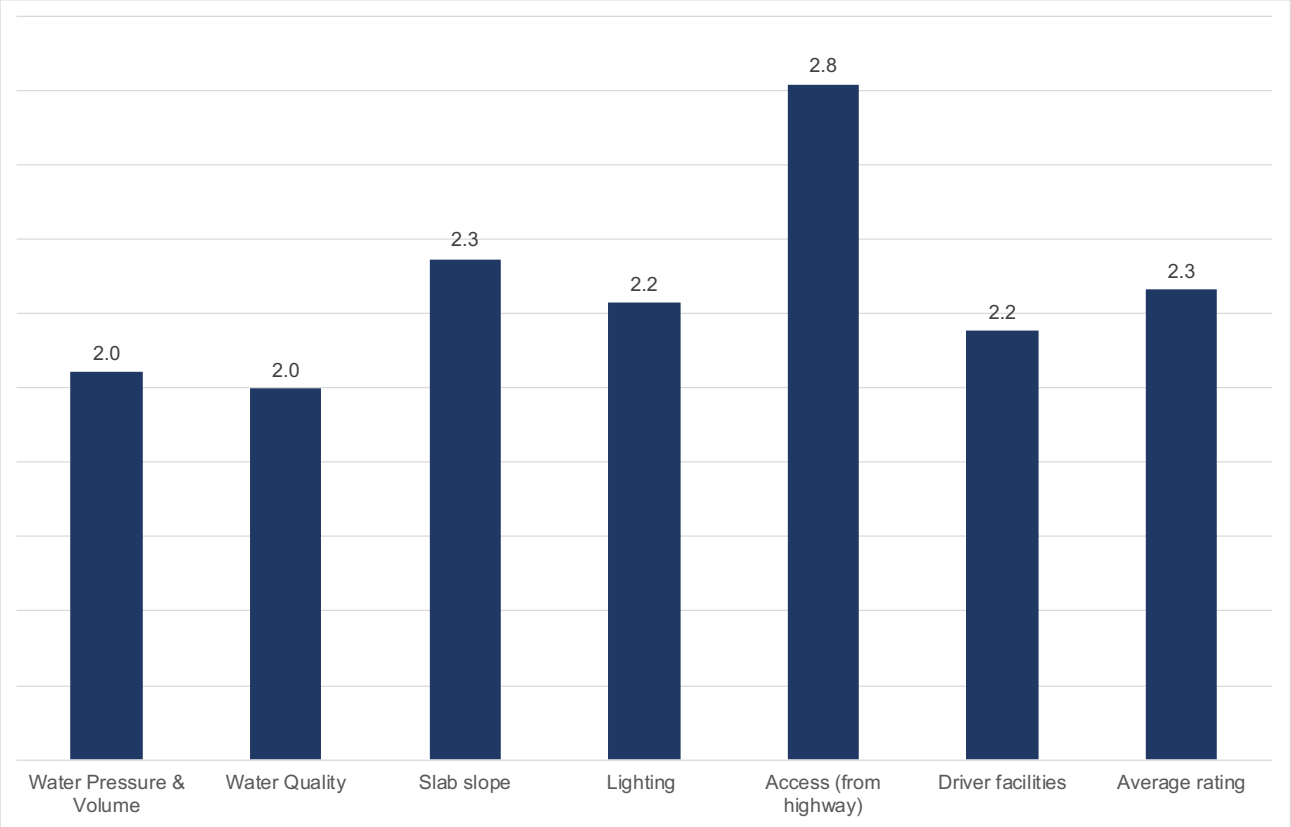


Figure 3-4: LRTAV average rating of truck wash features from truck wash sites assessed (rating out of 3)

Wastewater management

There was a range of wastewater treatment structures reported to be in use at truck washes (Figure 3-5).

These mostly included primary filtering to remove and stockpile waste solids, connection to urban wastewater treatment plant and discharge to a dedicated discharge area. Around 40% of sites reported having one or more of these systems.

While only one site reported having a dedicated sump emptying structure (Horsham) on their site, two thirds (63%) of sites accept sump or tank emptying, and respondents reported that their facilities' wastewater system had the capacity to accommodate sump emptying. It is however assumed that trucks will tend to empty their sumps at any site where there is sufficient slab slope and water pressure to clean the bay after use.

Of note was that the Victorian practice in sump emptying is in contrast to New Zealand where a network of dedicated roadside disposal facilities to accommodate sump emptying from livestock crates and other vehicles, has been established.[20]

[20] Beef Central website article 12/05/2017: *Time to follow NZ approach to effluent management – Aus livestock transporters* https://www.beefcentral.com/news/time-to-follow-nz-approach-to-effluent-management-aus-livestock-transporters/

Given the good coverage of truck washes statewide (other than the outer Melbourne area) operated alongside saleyards with solids removal systems/connections to town water etc already in place, it was evident to RMCG that any additional sump emptying infrastructure would ideally be located adjacent to the wash (like Horsham) or incorporated into the truck wash as a grated drain point running across the lowest point in the wash bay (like Ouyen or Murray Bridge) where a driver is already pulling up to wash the truck.

As discussed in Section 2.3, the types of wastewater infrastructure at each site depends largely on whether the site is connected to a town sewerage/wastewater system or whether it has its own standalone wastewater and manure treatment facilities.

Operating a wastewater system can be a large undertaking, and the survey indicated that 40% of sites do employ this option. For the remaining 60% of sites, while animal manure from livestock transports is a relatively low-risk waste stream, nonetheless there is an obligation on all operators to observe their general environmental duty under the Victorian EPA Act, as well as observe various guidelines for environmental management of wastewater, manure and mortalities.

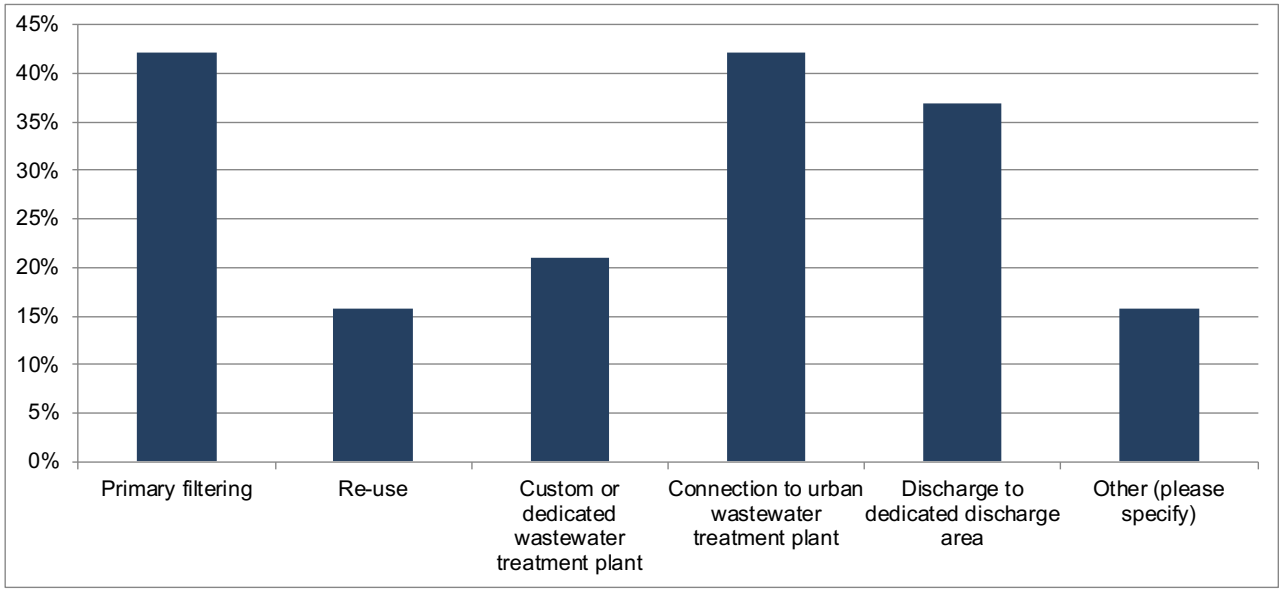


Figure 3-5: Wastewater management: type/s of treatment systems in use

Truck wash usage features

The survey asked site operators to report on the intensity of use, any congestion issues and when, and their main customers.

Half of the sites estimated that between 20–50 trucks used the truck wash facility each week, with a further 30% of sites used more than 50 times per week. Approximately one-third of truck washes were reported as most busy on sale-days, with a further one-third most busy on weekdays more generally (outside the saleyard process). Like sale days, specifically busy days in any week, varied across sites.

The number of trucks entering the site per sales day varied significantly based on livestock type and saleyard size; however, this ranged from between 10 to 200 trucks per sales day. Of those trucks entering, it was estimated that two-thirds overall used the wash before leaving the site; however, there was substantial variation between sites. Some estimated as few as 10% of trucks would use the truck wash before leaving the site, whilst others estimated that 100% would wash down their trailer. The spread of responses is shown in Figure 3-6.

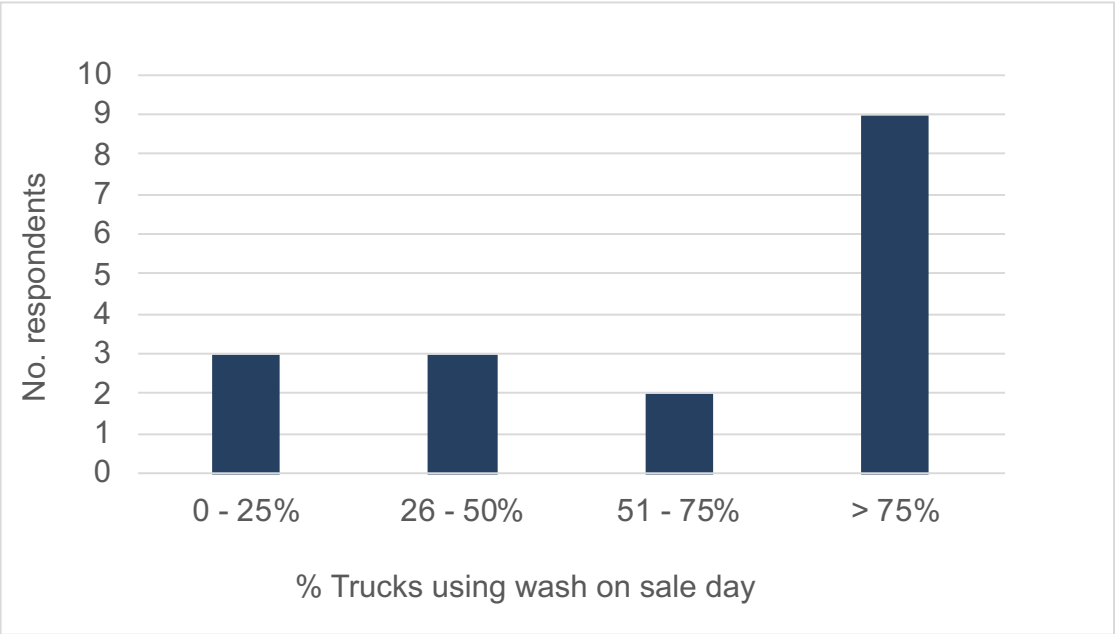


Figure 3-6: No. respondents and observed proportion of trucks using wash on sale day

Three-quarters of truck wash operators ranked livestock deliveries to the saleyard (on sale days and non-sale days) as their main customer group, with the remaining one-quarter of facilities ranked livestock vehicles in transit from abattoirs as their main user group. The results of ranking customer groups as a 'score' across all sites are shown in Figure 3-7.

B-doubles were the largest permitted truck at approximately 80% of sites surveyed. Only 20% permitted road trains to use their facility.

Half of the sites were rated as having light congestion only and almost all of the remainder as moderate – with only one site reporting their truck wash facility having heavy congestion issues (Euroa). Only 15% of sites reported their level of congestion resulted in trucks turning away at peak times.

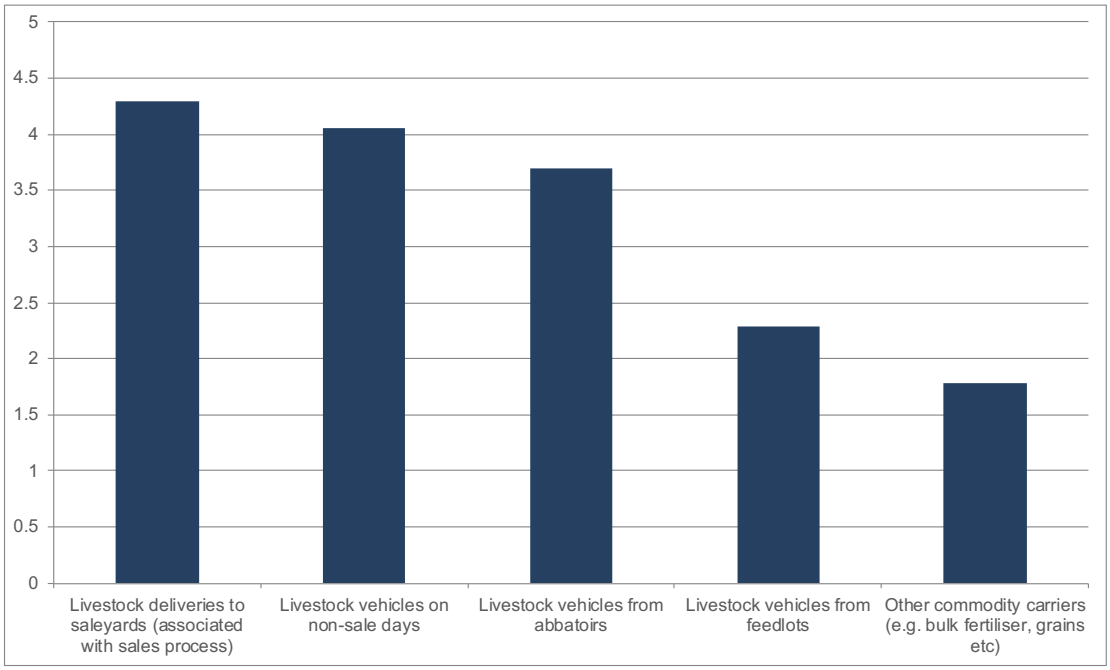


Figure 3-7: Saleyard operators ranking of main truck wash customer groups

Relative usage between sites

The relative usage between sites was assessed (number of trucks entering the wash and time of washing) using several data sources. These included:

- Five-year (2018 to 2022) time series data set of wash minutes/day for 16 truck washes (users were de-identified)
  - provided by Avdata with permission from each site operator
- Survey of truck wash operators where responses from 25 different sites were received
  - information was collected on estimates of the number of trucks using wash on sale days and at other times
- Consultation with livestock transport carriers Industry
  - transport operators were able to fill gaps on relative usage at some sites where either survey responses had not been received and/or Avdata was not made available to the study

Analysis of all available data sources allowed classification of truck washes into highest, moderate and lowest use sites, as shown in Table 3-1. The distribution of the most frequently used or busiest versus lower use truck washes is shown in Figure 3-8. Noting that sites where no usage information was collected are mapped as “other”. There are 18 sites where no data on usage was available for the study.

It is evident that the highest use washes are in close proximity to regional abattoirs, located at saleyards with high throughput and on the main roads and highway/freeway network.

Figure 3-8: Location of truck washes and their intensity of use

Table 3-1: Assessment of the relative intensity of use of truck washes

#	Level of use	Truck wash facility location
1	**Highest use**	Ballarat CVLX Truck wash
2	> 40 hours/week	Naracoorte Truck wash
3		Shepparton Regional Saleyard
4		Hamilton Regional Livestock Exchange
5		Warrnambool Saleyard
6		Kyneton Saleyard
7		Colac Saleyard Truck wash
8		Mortlake WVLX Truck wash
9		Swan Hill Regional Livestock Exchange
10		Pakenham Victorian Livestock Exchange
1	**Moderate use**	Mount Gambier - Glenburnie Saleyard
2	20 to 40 hours/week	Wangaratta Truck wash
3		Geelong Truck wash
4		Bendigo Livestock Exchange
5		Ouyen Truck wash
6		Echuca Saleyard Truck wash
7		Horsham Regional Livestock Exchange
1	**Lowest use**	Euroa Saleyard
2	< 20 hours/week	Sale GRLE Truck wash
3		Warracknabeal Saleyard
4		Casterton Saleyard
5		Wycheproof Saleyard
6		Nhill Saleyard
	23 sites assessed	
	Other truck washes	Bairnsdale Saleyard
		Balranald Saleyard truck wash
		Benalla Truck wash
		Berrigan Saleyard
		Boort Truck wash
		Bordertown Saleyard
		Camperdown CRLX Truck wash
		Corowa Saleyard
		Deniliquin Saleyard
		Finley Saleyard
		Jerilderie Saleyard
		Keith Saleyard
		Kerang Saleyard
		Leongatha VLE Livestock Marketing Centre
		Loddon Truck wash
		Millicent Saleyard
		Pyramid Hill Truck wash
		Wodonga NVLX Truck wash
	18 sites not assessed	

Time series analysis of truck wash usage

RMCG received permission from 15 truck wash operators to access Avdata usage records. This included five higher use sites, seven moderate use and three lower use sites.

Across all sites together, it was found that over the past five years (2018 to 2022):

- Highest use days in the week were Monday, Tuesday and Wednesday
- Highest usage months were March, May and November (September was 'average')

While some site-specific variation was evident, there has been no overall trend or change in truck wash usage patterns over the past 5 years. Both the number of truck wash visits and wash hours (Figure 3-9 over page) remained steady. There was also no change in washing patterns, i.e. time taken per wash.

A maximum of 20% of truck wash capacity, i.e. accounting for all available hours (24/7) and bays, had been used at the busiest washes. It should be noted, however, that washes are rarely used between the hours of 11 pm and 7 am, so the percentage of truck wash capacity in use during high demand times of the day was much higher.

It is expected that customers (livestock producers and abattoirs) will demand a cleaner fleet of livestock vehicles in the future. This would increase the frequency and duration of truck washing activities statewide. Improved facilities over time with well-designed floor slopes and high quality variable pressure pumps providing ideal water pressures from easy-to-use cleaning hoses may reduce the wash time taken per vehicle needed to achieve a high standard wash.

A more detailed analysis of use data received from five of the higher use washes follows.

The higher use truck washes were:

- Ballarat CVLX Truck wash (TBLT)
- Naracoorte Truck wash (TNR1 & TNR2)
- Shepparton Regional Saleyard (TSHT)
- Hamilton Regional Livestock Exchange (THAM)
- Warrnambool Saleyard (TWRN)

Yearly variation in usage characteristics was apparent in the data, but no clear trend across all high use sites was evident over a 5-year period from 2018 to 2022.

An increase in the number of uses or washes over the 5-year period was evident at Hamilton (31%) and Ballarat (24%), whilst Naracoorte and Shepparton slightly declined. Warrnambool declined by 12%, which may be linked with underlying factors relating to the closure of the Warrnambool saleyards in March 2023 (Figure 3-10).

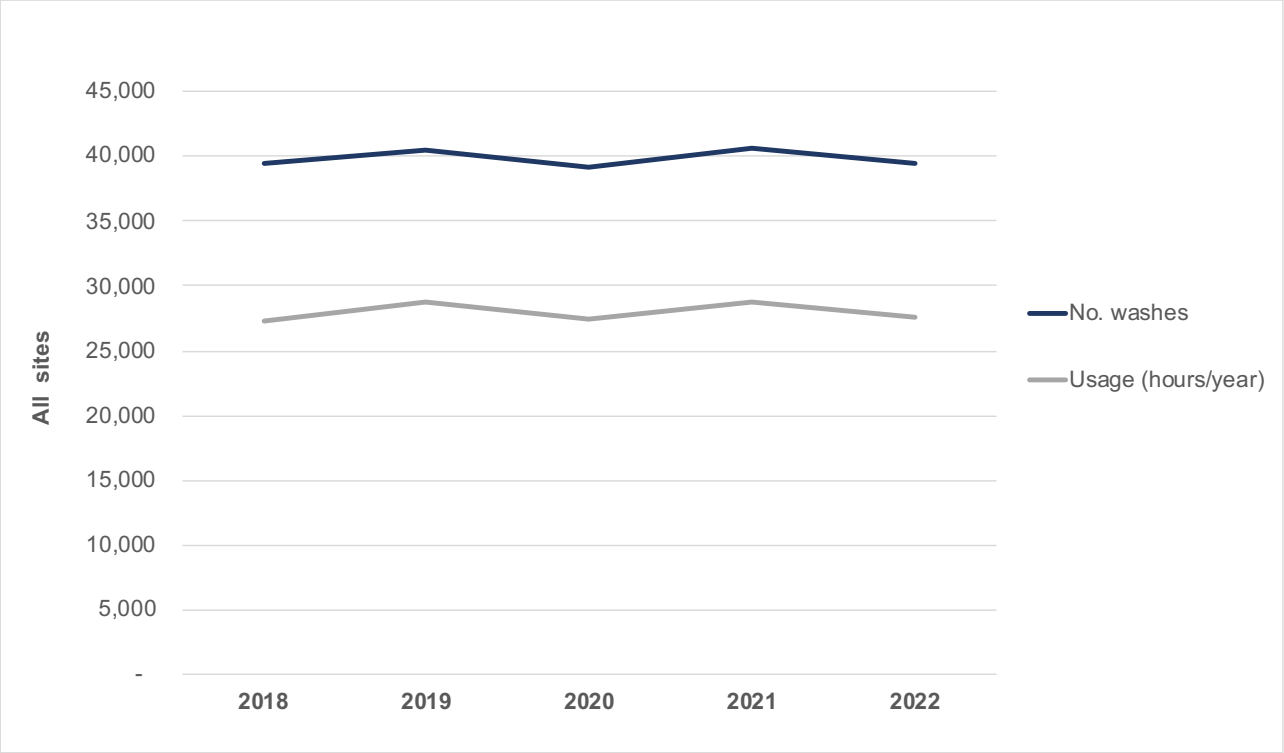


Figure 3-9: Combined Avdata truck wash usage numbers for 15 sites between 2018-2022.

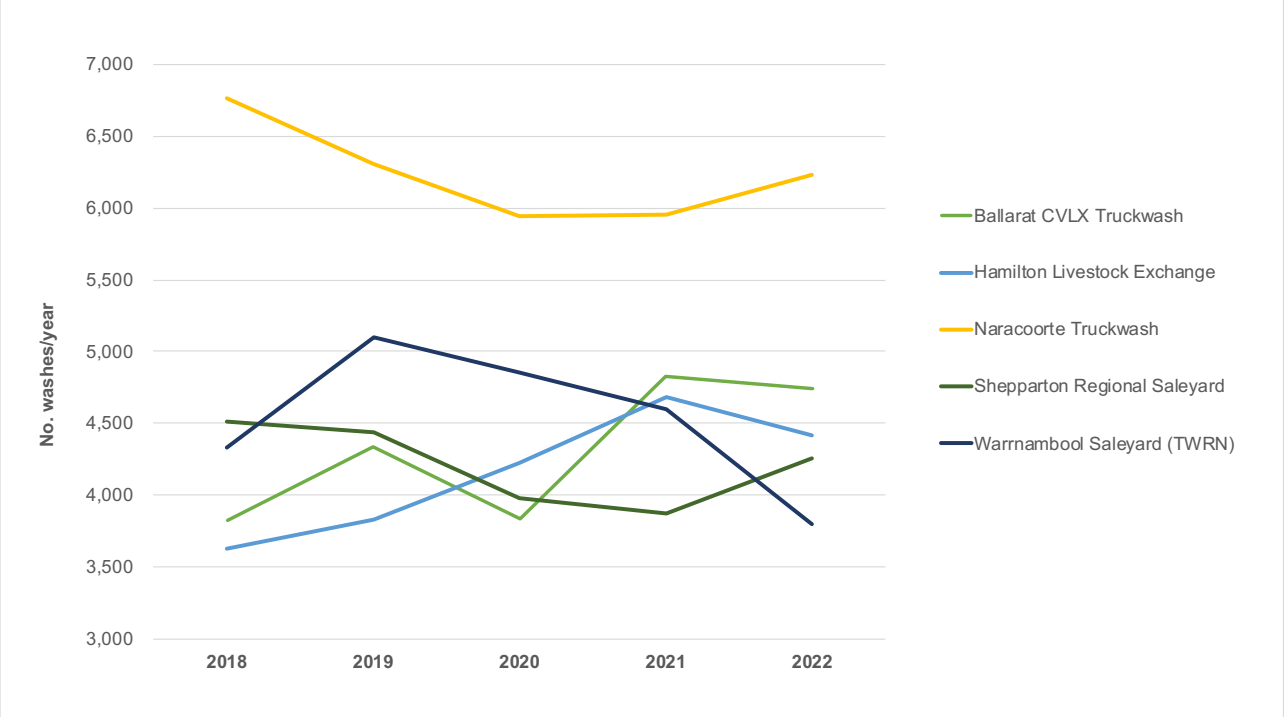


Figure 3-10: Trend in number of washes per year for five high-use sites

Ballarat experienced a substantive increase in wash hours per week, between 2020 and 2021 before slightly reducing in 2022, whereas Warrnambool had a continuing decline in wash hours since 2019. There was also a decline in wash hours at the Shepparton and Naracoorte sites (Figure 3-11).

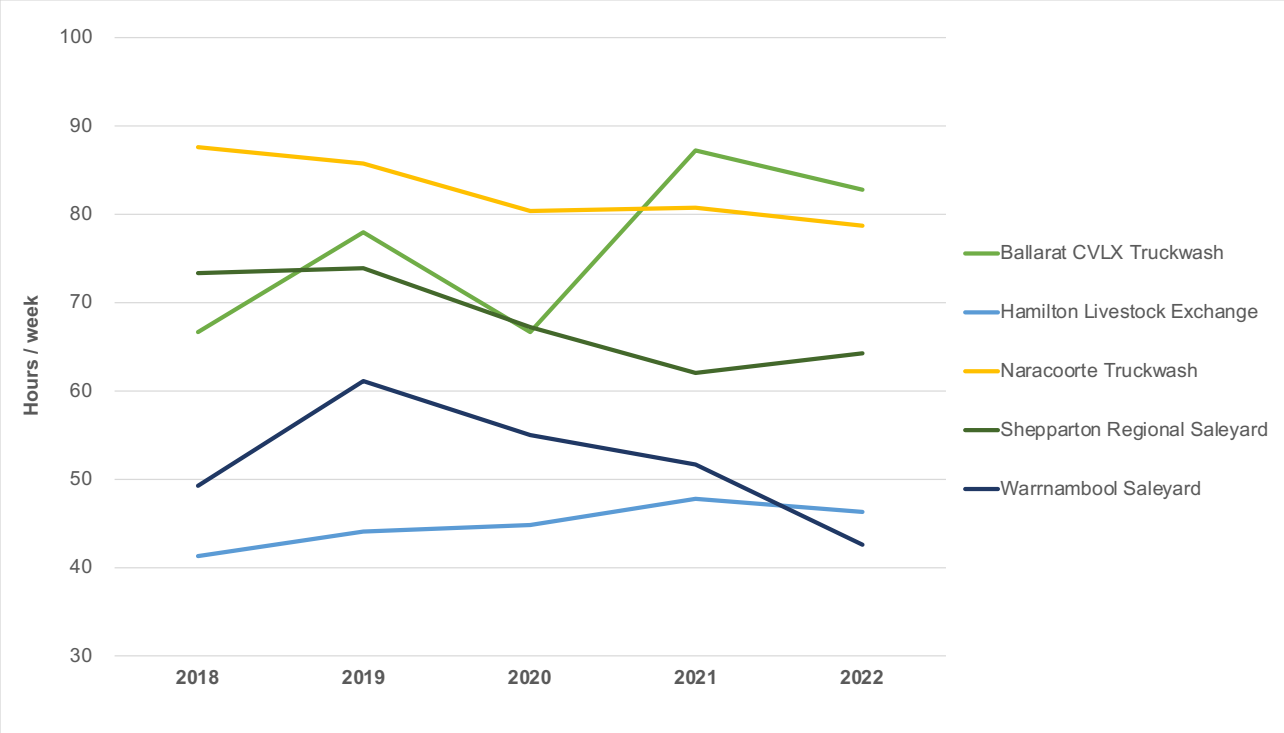


Figure 3-11: Trend in usage hours per week for five high-use sites

Across all 15 site, there was also little change in washing patterns i.e. the average time taken per wash and the proportions of shorter, medium and longer wash times remained similar over the 5-year period. Average wash times per wash however varied between sites i.e. from 23 minutes at Casterton to 77 minutes at Horsham sites.

There was a slight decline in the average wash time for Hamilton (-11%) and Shepparton (-8%) sites, with no discernible change for the other high-use sites (Figure 3-12).

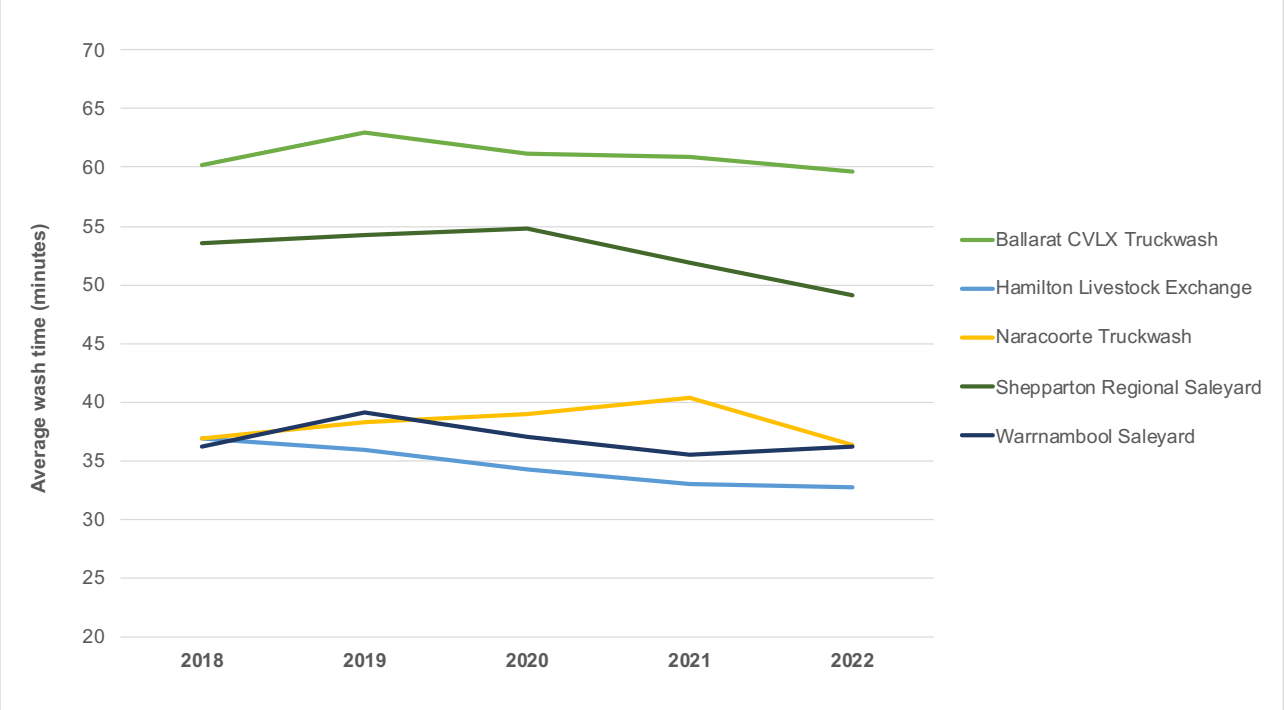


Figure 3-12: Trend in average wash time for five high-use sites

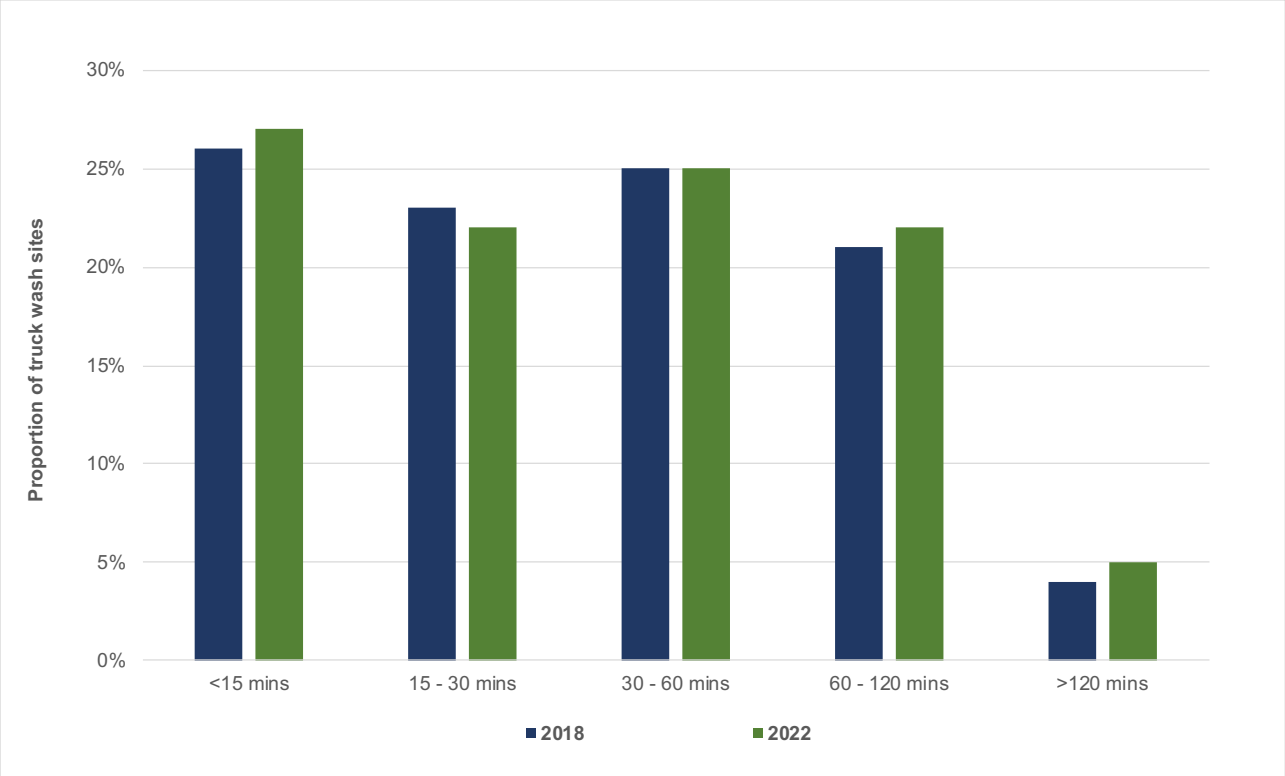


Figure 3-13: Change in average wash times from 2018 to 2022 – all 15 sites

There was no change overall in the profile of the length of time of use of all washes between 2018 and 2022 (Figure 3-13).

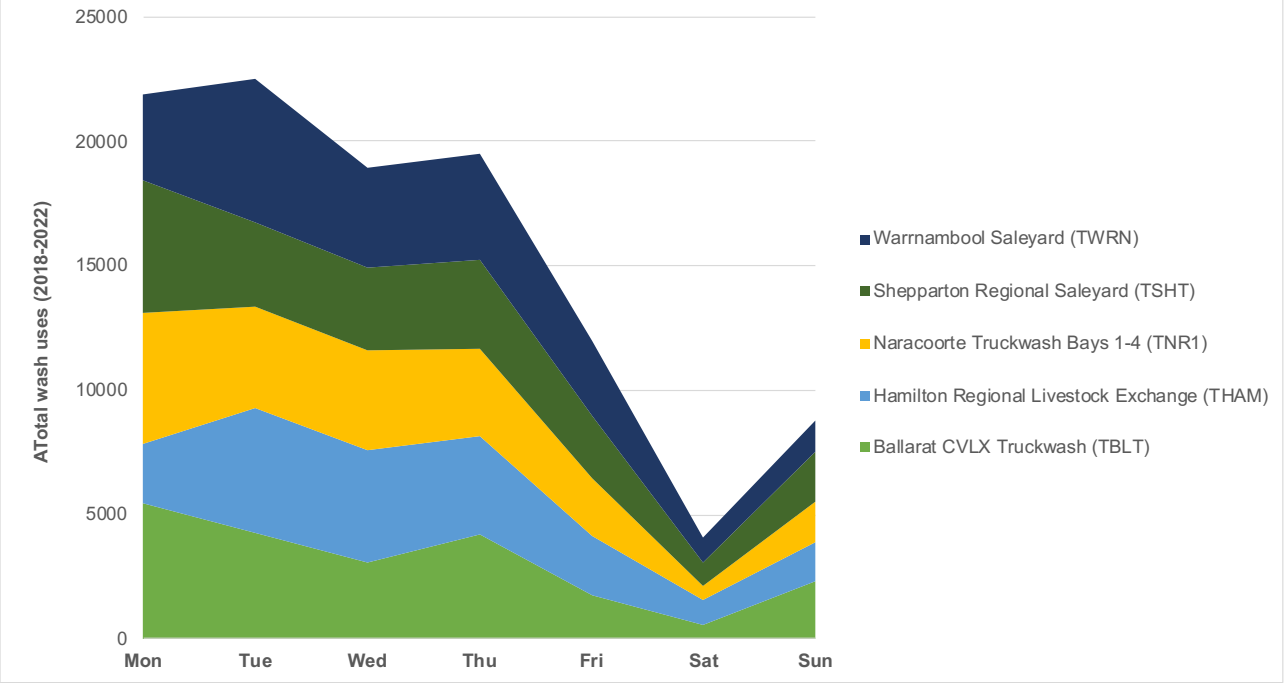


Figure 3-14: Total uses at top-5 high-use sites by day of week

Uses by day of the week were similar between each of the high-use sites. Mondays, Tuesdays and Thursdays were the busiest days across all truck wash sites, whilst Friday-Sunday were clearly the days with least usage (Figure 3-14).

Operation and revenue

Over 90% of truck wash facilities were reported as accessible 24/7. Approximately 95% of truck wash sites were found to accept Avdata as payment, with 10% also accepting cash. One site was free to use.

60% of sites reported that they had at least some form of security surveillance present either at the entry gate or at the truck wash. Approximately two-thirds of sites are cleaned by the site owners at least weekly, utilising simply a hose or using both a bobcat and a hose to maintain a clean facility.

Over half of the operators reported that their truck wash facility generated sufficient income to cover maintenance and operating costs (however, it was noted during further consultation that many saleyard and truck wash operational costs were aggregated, meaning it was difficult to know if the facilities were self-sufficient).

Higher use sites were more likely to be 'paying their way' than lower use sites.

Pricing varied for each site and ranged between 70c/min to 300c/min. The median price across all sites which provided pricing was 113c/min. The vast majority of sites were priced between 100 and 200c/min.

Future intentions

One quarter of operators reported they were planning to upgrade their facility, whilst over half (60%) were intending to only maintain their facility. 10% (2 respondents) noted their facilities will be closed in the immediate future (Geelong and Warrnambool).

There were no clear trends in upgrade features being considered by operators as they varied significantly between sites. Two facilities were considering new double or multi-drive-through truck washes with associated infrastructure. Other upgrades being considered by several sites included improved facilities for drivers, constructing a roof over wash bays and providing the option of automated chemical application/addition of disinfectant. Trailer effluent dump upgrades were also being considered by one site.

Other issues

Attributes desired in future truck wash upgrades varied. However, better lighting and facilities for drivers were common themes across both the saleyard operators and truck operators' surveys. Roofing was a further desired attribute.

Overall, saleyard operators were evenly split half/half on whether the existing statewide truck wash network is adequate for current demand. Of the half that stated the network was inadequate, most did not identify where there was a gap. There was no commonly identified location for a new facility.

Biosecurity and environmental regulations were the key emerging issues commonly raised by saleyard operators. One respondent indicated upgraded capacities are required for biosecurity purposes to ensure trucks do not bypass truck washes. Others indicated the costs of maintenance and lack of upgrades would be a concern in future years.

Desired features in truck washes were reported to include drive-through capability, being enclosed with a roof, good lighting, self-cleaning, water treatment and high water pressure.

3.3 CASE STUDIES ON SITE VISITS

RMCG visited a selection of truck wash sites.

Information on individual truck washes was gathered during the study from a range of data sources, discussions with stakeholders and observations made during site visits.

The sites visited were (

Figure 3-15):

1. Horsham Regional Livestock Exchange
2. Ouyen Livestock Exchange
3. Big River Pork abattoir, Murray Bridge, SA
4. Wycheproof Saleyards
5. Echuca and District Livestock Exchange
6. Kyneton Saleyards
7. (former) Geelong Saleyards

Figure 3-15: Location of seven case study sites

The site visits confirmed the findings of the truck wash operator and user surveys in that:

- None of the publicly accessible sites had disinfectant in their operating system; only the new purpose-built truck wash for a large pig abattoir in Murray Bridge, SA.
- Some sites were paying their way (covering operating and maintenance), while others were not
- All sites had driver amenities (toilet, shower)
- Only two sites had walled bays (Murray Bridge and Ouyen) and/or an overhead roof (Kyneton and Murray Bridge), and these washes were relatively newly constructed or had been upgraded

- Only one site could accommodate heavy vehicles larger than B-Doubles (Ouyen)
- The majority were accessible 24 hours a day
- A large majority provided hoses and nozzles for users (except Horsham)
- The quality of driver amenities and equipment was variable between sites
- Half of sites visited provided space for extended truck parking (excluding Geelong, Kyneton and Echuca).

The case studies are not meant to be an exhaustive inventory of all relevant information but rather provide an overview of the infrastructure, attributes and functionality of a selection of truck washes.

They are documented in Appendix 1.

4 Strengthening Victoria's truck wash network

4.1 GAPS IN THE NETWORK

Confirmation of the ongoing operations of several large metropolitan abattoirs, combined with the imminent closure of the Geelong truck wash facility, has reinforced the need for a truck wash facility accessible to the livestock carrying industry in reasonable proximity to metropolitan livestock drop-offs at abattoirs, ideally within a short detour from the Melbourne Western Ring Road or Hume Highway. This gap in the network was reinforced by stakeholder consultation and is evidenced by current livestock movements and meat processing location and volume data.

There is a lack of truck washes in proximity to these abattoirs and there is likely to be substantive unmet demand for truck washing services. The spatial distribution of truck washes in relation to Greater Melbourne abattoirs (and some regional saleyards) is shown in Figure 4-1, highlighting the considerable travel distances for trucks to access washing facilities after delivering into Laverton, for example. These are:

- West: Geelong (50 km)
- Northwest: Ballarat (100 km]
- North: Kyneton (75km), and
- North east: Euroa (125 km)

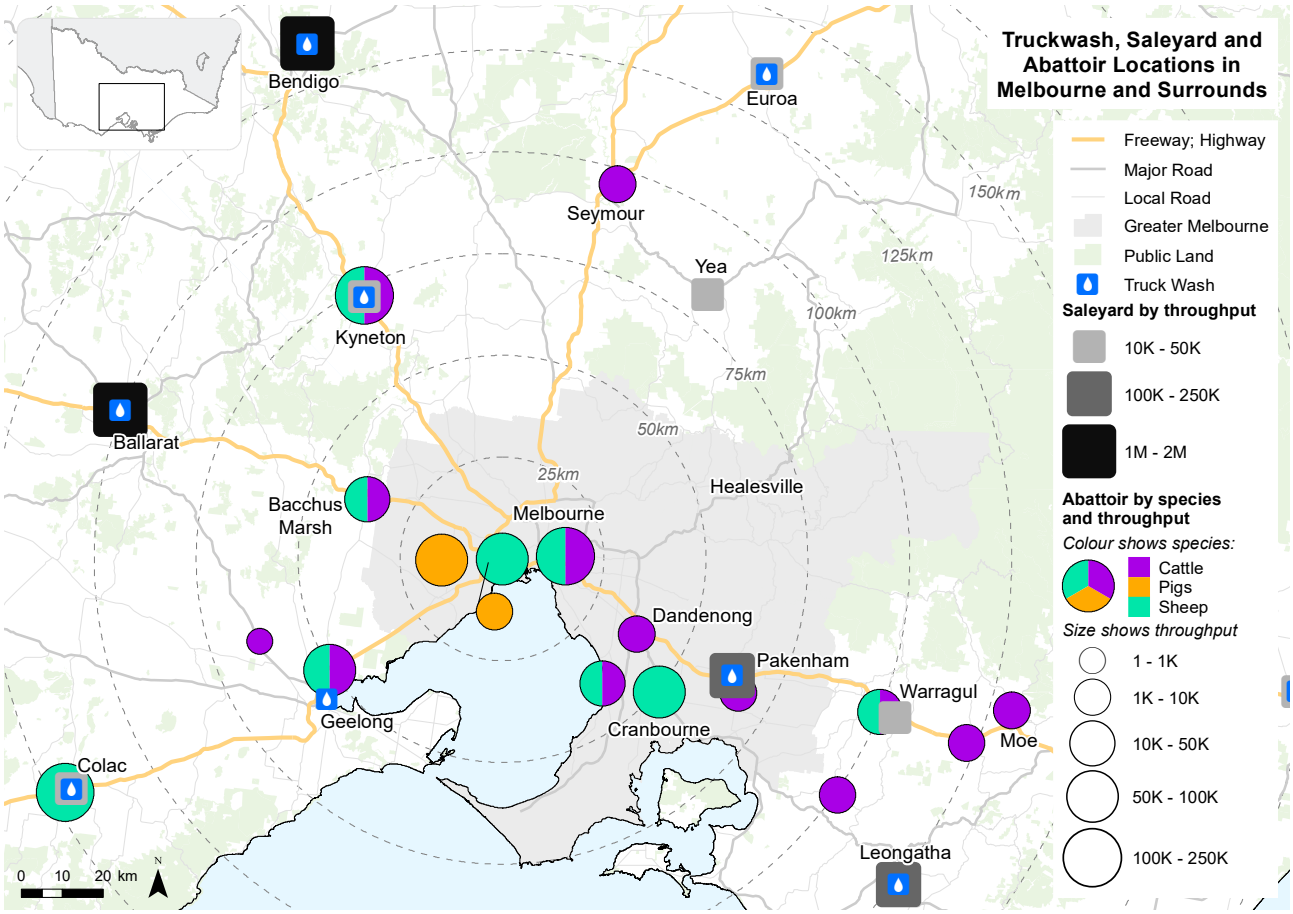


Figure 4-1:Target area for the study – 150 km radius of Melbourne

Data sources: PIC location geo-referenced data for abattoirs from NLIS, Avdata geo-referenced truck washes.

At the time or writing, discussions with key stakeholders in the Geelong area had commenced about the feasibility of developing a new multipurpose facility built in the area that would replace the former livestock exchange and relocate the remaining truck wash facility. Users of the existing Geelong facility reported that the wash fees had recently increased to $3.00/minute.

The assumptions made to model truck movements from NLIS livestock movement data are shown in Appendix 2. These assumptions were made with advice from a large Victorian livestock carrier on truck trailer types and load factors for each livestock category.

A summary of livestock truck movements delivering into metropolitan abattoirs on a monthly basis is shown in Table 4-1 below.

Table 4-1: Modelled livestock transport movements into Greater Melbourne abattoirs (per month)

#	Trailer type	% Deliveries	Sheep	Cattle	Pigs	All
1	B-Double	51%	575	793	182	1,550
2	Semi-trailer	36%	402	505	182	1,089
3	Rigid truck	13%	172	144	91	408
	Total trucks	**100%**	**1,150**	**1,442**	**455**	**3,048**
	Weekly deliveries		287	361	114	762
	% of trucks		38%	47%	15%	100%

Source: NLIS data for September 2022 in regard to livestock numbers, combined with transport operators' consultation with respect to loads and relative trailer/vehicles used to move livestock.

The proportion of modelled truck deliveries into Greater Melbourne by livestock category and trailer type is shown in Figure 4-2 below.

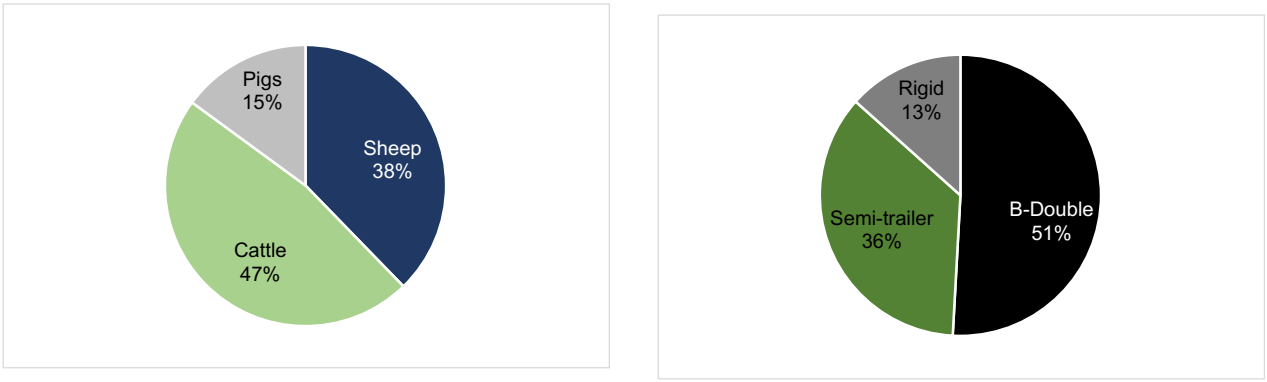


Figure 4-2: Proportion of trucks making deliveries: livestock category and trailer type

In contrast to this relative scarcity of truck washes servicing metropolitan-based abattoirs, there is a considerably larger network of truck washes located in northeast Victoria servicing regional abattoirs.

Their location in relation to regional abattoirs in northeast Victoria is shown in Figure 4-3 (over page).

There are two truck washes within 25 km servicing abattoirs located in Tatura and Nathalia.

There are also truck washes located at or within 25 km of abattoirs in Wodonga, Wangaratta and Tallangatta.

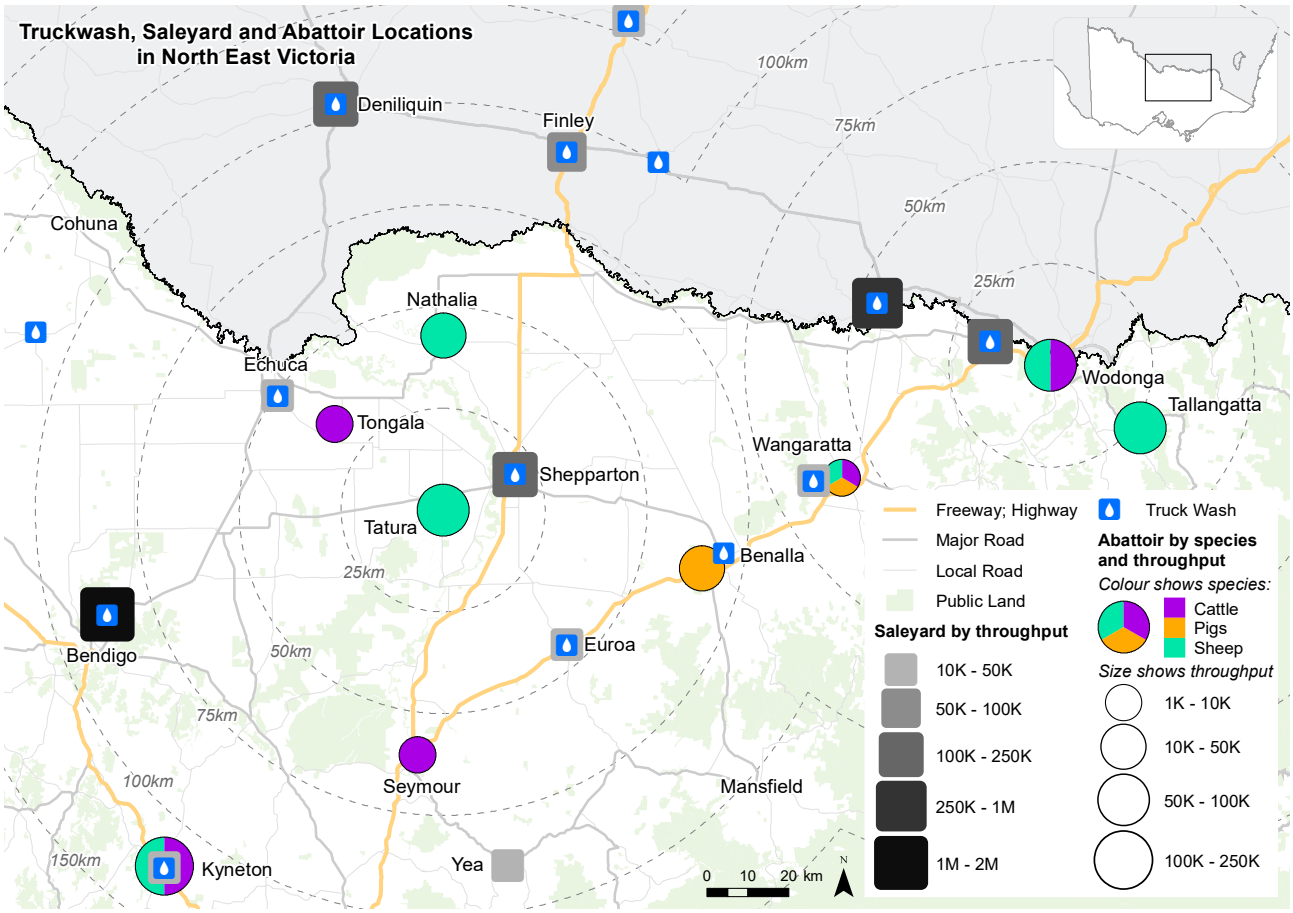


Figure 4-3: Proximity of truck washes to abattoirs operating in northeast Victoria

Further stakeholder feedback

Feedback from the Yea saleyard operator highlighted a gap in truck wash facilities in the Yea area. The Yea saleyard process 35,000 per year plus transit stock travelling through the area. Euroa (80 km away) is the closest truck wash to Yea. Anecdotal evidence suggested that tanks are being emptied in an unauthorised manner (i.e. dumped) at the saleyards. There were also anecdotal reports of dumping on-farm and illegally on public property (roadside sites, near main roads). Funding for a feasibility study into a potential new truck wash in the Yea area had been set aside for this year.

Operators of the Colac truck wash expressed a need for an upgraded truck wash to service trucks delivering to the saleyards and a large throughput sheep abattoir.

Similarly, operators of the Echuca truck wash expressed that their existing set-up did not meet industry standards and that it was only servicing livestock transports, but there was potential to accommodate fertiliser and other trucks if it was upgraded.

4.2 SUMMARY OF OPTIONS TO AUGMENT NETWORK

The announced and pending closure of the Geelong truck wash will elevate the importance and urgency of the development of a replacement facility. If the facility is to provide wider benefits, an analysis of current livestock movements, combined with feedback from industry participants, indicates a site on or near the Western Ring Road or Hume Freeway, or in the Werribee/Lara area would meet the needs of the largest industry cohort. Three options are considered in this report:

Option 1a) A new purpose-built facility west or north of Melbourne.

Characteristics would include:

A modern stand-alone roofed facility, initially of 3 separated bays, providing 24-hour, 7-day priority access to the livestock carrying industry.

A facility should have the following additional characteristics:

- An undercover facility with roof height at least seven metres, lights and contemporary driver amenities, easily able to be modified/upgraded to cater for use during the recovery mode of an announced disease outbreak.
- Ease of access from the Western Ring Road (or Hume Freeway) for livestock carriers throughout the full range of current and likely future vehicles used (20 m tray truck to 60+m A Double configurations).
- A minimum 1.5 Ha substantially paved area, with capacity for multiple large truck parking on both the approach and outbound sides of the wash. Separate entry and exit points, with the capacity for washed vehicles and their drivers to be isolated from incoming vehicles still to be washed.
- Noting that a modern 3-bay wash is estimated to meet only the minimum requirements of livestock carriers during peak periods (when vehicles are exiting the city following morning drop-offs at city-based abattoirs) the ability to be expanded to 4 or more bays and to service A-Double sized vehicles (in a single move) without requiring further land acquisition is a high priority.
- Appropriate zoning to avoid potential land use conflicts.
- Connection to reticulated water services.
- Connection to reticulated sewerage services. Preliminary advice from Greater Western Water indicates that a trade-waste connection to the sewer is feasible provided the effluent is strained using (for example) an enhanced screening device such as contra shear rotary screen or hydro cyclone (to remove grit, sand and gross suspended solids), continuously measured and logged (for flow, temperature, pH), pumped freshly to sewer (to reduce the generation of ammonia and sulphides and avoid pH degradation). Charges would apply, including an annual fee, volumetric charges, and quality-load charges for biochemical oxygen demand, suspended solids, total Kjeldahl nitrogen and total dissolved solids.
- Automated solid waste separation with regular stockpiling and removal of solid waste.
- A facility staffed during peak periods (8 hrs a day/ 6 days) with active off-site remote security and surveillance services incorporated.

1b) As for option 1a) but to be co-located with an existing heavy vehicle and truck services centre.

Identical attributes to 1a), but enabling shared parking facilities and utilising the management and staffing of an incorporated service station/truck stop as an additional commercial activity for the business owner.

Option 2 Upgrades to strategically located washes – Kyneton, Ballarat, Euroa (and with Geelong closing) Colac – improve quality and capacity of existing facilities in strategic locations.

Each facility would be evaluated in terms of current capacity and service standards and then further redeveloped to include roofing, bay isolation and other measures to improve site biosecurity, water/wastewater management, hourly wash capacity, safety and ease-of-wash for operators, with the provision of appropriate modern and hygienic facilities for drivers.

4.3 IMPROVING TRUCK WASH PERFORMANCE

TRUCK WASH ATTRIBUTES CURRENT

The key issue for livestock carriers is to use a service that minimises the time needed to achieve a high-quality wash of livestock transport. Factors that contribute to a facility that meets user needs include:

- Good access from the highway and well located relative to the return journey
- Low congestion (at least three bays at the site)
- A good concrete slab slope (~ 15 degrees) within the wash to facilitate drainage and cleaning
- Wash water provided at the best possible range of volumes and pressures needed
- A fair price with an operable payment system
- Good lighting, including lighting not connected to the payment system.

Truck drivers will also prioritise driver amenities available, which will include:

- Parking availability
- Comfortable amenities including clean washrooms, change facilities, food and fuel availability.

A new facility that included accessible online information could improve efficiency for users by reducing wait times. For example:

- 24/7 live camera feed for transporters to check on congestion at the site
- An online booking service.

Industry participants and state authorities seeking to maximise biosecurity would prioritise a facility that enhances biosecurity and wastewater management through:

- Capacity for vehicle (and driver) isolation during washing and before and after washing
- Compliant and water-efficient water supply and wastewater systems
- Noise abatement to ensure low noise output from vehicle movements and washing operations, and model site waste management to minimise odour concerns from neighbours and the broader community
- A facility that has the capability of being quickly upgraded in the event of a disease outbreak to provide higher assurance of vehicle and stock crate cleanliness.

An owner-operator of such a facility would seek to prioritise attributes that:

- Ensure a steady stream of customers, enabling high truck wash utilisation and income
- A facility with the lowest possible energy, water and wastewater costs
- Wherever possible, automated cleaning and management, minimising input labour requirements
- Where possible, parking integrated with parking associated with other services (e.g. trucks using associated cafeteria facilities, or re-filling with fuel (or in future re-charging batteries)
- Has reliable operating components: payment system, pumps, controls, hoses, nozzles, waste removal, lights, and amenities, if provided
- Low maintenance paving at approach, exit and within the facility
- Include a well-designed and effective effluent management system, particularly for the removal of solids
- Is geographically buffered from sensitive neighbours.

ADDITIONAL REQUIREMENTS FOR TRUCK WASHES – DISEASE OUTBREAK

It is difficult to provide a universal solution because the industry response to a disease outbreak will be largely determined by the nature of the specific disease, the scientific understanding of its spread and national expertise and international experience in regard to the most effective response.

The washout process itself may not significantly change; however, there may need to be use of after treatment chemicals and/or a modified wastewater capture process.

Most interviewees (during the study) indicated that the issue of livestock movement 'conditions' which included the requirements that may be demanded in regard to truck washing between transport activities would be likely to follow an industry wide, or farm-by-farm 'stand-still order' issued by state or Federal authorities. The lifting of the stand-still order, and permits issued during a stand-still for movements assessed as low risk, would be likely to include specific requirements for truck washing between transport jobs.

Based on the discussions held with abattoir operators familiar with European abattoir and truck cleanliness standards, and the specifications supplied for a new German facility designed to manage disease risk[21] (African Swine Fever) the following additional measures (further to those already available), may be considered when adding capacity, assurance of wash quality and minimising of disease spread risk:

- Improved site security with all, entries and exits monitored and recorded
- Separate entry and exit lanes for vehicles and people entering the truck wash facility
- Separation of trucks at all times, including easily cleaned walls between wash bays
- Ability to provide independent inspection and certification of truck wash quality
- Creation of zones e.g. red zone for washing, grey zone for truck isolation and drying and green zones for clean vehicles and drivers
- Isolation of driver facilities to minimise cross-contamination risk including separate change rooms, disposable overalls and seat covers'
- Gas fired drying to accelerate decontamination and truck isolation periods after washing
- Universal use of detergents and mechanical brushing in washing
- Disinfectant spray for use after washing (and in the vehicle cab)
- Clearing all waste from sump and into dry-waste facility prior to next truck entering wash
- Capacity to remove most solid waste with low pressure water hose to minimise creation of aerosol
- High pressure wash for final clean, including a detergent dispenser, and an after-wash disinfectant.
- The inclusion of warm or hot water in the pressure wash to improve the wash and the break down of dirt
- Vacuums etc for cab-cleaning, and facilities for cleaning of floor mats from cabin
- Traffic monitoring (remote, or site based) to make sure all vehicles are recorded in and out, and wash-times are logged accurately
- Regular independent program of washing of the walls, floor, approaches and footpaths associated with the facility
- Assessment of risk of disease spread based on construction materials and design of facility (e.g. gaps in steel cladding, compared with concrete walls)
- Removal of all waste from site 'public areas' before another vehicle enters the facility.

[21] Pig 333 May 2020 The ideal truck wash for cleaning and disinfecting livestock transport vehicles

4.4 FINANCIAL ANALYSIS OF MAIN OPTION

A financial analysis of the proposed three-bay truck washing facility was conducted to estimate its cost, revenue and profitability. The methodology and findings of the analysis are presented below.

METHODOLOGY

Key methodology and design assumptions used in the analysis are as follows:

- The facility will be established in 2024, i.e. project year 1 (PY1), and will commence operations in PY2
- The operational life of the facility is 20 years (2025-2044)
- An annual discount rate of 7% was used in estimating present value (PV) of future costs and revenues; this discount rate is based on the long-term opportunity cost of capital as estimated by Infrastructure Australia[22]
- Tax rate of 30% was used on earnings
- All prices were expressed in 2023 AUD constant terms, i.e. inflation is excluded from the analysis.

DEMAND FOR THE FACILITY

Spatial analysis of livestock movements in relation to the location of truck wash sites and their proximity to abattoirs and saleyards, indicated a distinct or clear gap in the truck wash network servicing livestock carriers delivering into Greater Melbourne abattoirs (as described in detail in section 4.1). NLIS data indicated that 71,000 pigs, 67,000 cattle and 470,000 sheep were delivered to metropolitan based abattoirs for processing during the month of September 2022. Goats were not included in the analysis, noting however, that a proportion of goats entering Victoria from SA and NSW is processed in Metropolitan Melbourne-based abattoirs. These abattoirs process a significant proportion of livestock either grown in or entering Victoria (estimated to be in the order of 85% pigs, 40% cattle, 30% sheep) and this is likely to continue.

Monthly livestock carrier truck movements delivering into metropolitan abattoirs were modelled using i) NLIS data and, ii) information provided by the livestock transport industry on loads and vehicle/trailer types for each livestock category. The results are shown in Table 4-2. Truck washes are also used during off-peak times by carriers of other livestock and non-livestock trucks.23 These sources of demand for truck washing were used to estimate the overall demand for the proposed facility in terms of its utilisation rate and fees charged (as discussed below).

Table 4-2: Modelled livestock transport movements into Greater Melbourne abattoirs (per month)

Trailer type	% deliveries	Sheep	Cattle	Pigs	All
B-Double	51%	575	793	182	1,550
Semi-trailer	36%	402	505	182	1,089
Rigid truck	13%	172	144	91	408
Total trucks	**100%**	**1,150**	**1,442**	**455**	**3,048**
Weekly deliveries		287	361	114	762
% of trucks		38%	47%	15%	100%

Sources: NLIS data for September 2022; consultations with transport operators.

NLIS data on livestock movements to abattoirs were further validated by published data on annual meat processing figures for Victoria.

[22] Victorian Department of Treasury and Finance. 2013. Economic Evaluation for Business Cases - Technical guidelines. URL: https://www.dtf.vic.gov.au/sites/default/files/2018-03/Economic%20Evaluation%20-%20Technical%20Guide.doc

[23] The volume of truck wash demand from all sources was estimated using data from an existing truck wash operator.

The modelled livestock movements assume that existing metropolitan based abattoirs will remain operational and not close or decentralise over the project period of 20 years.

SCALE OF THE FACILITY

Key assumptions regarding the scale of the proposed facility are as follows:

- The facility will be established on 1.5 ha of land in the Greater Metropolitan Area of Melbourne (off the Hume Highway or Western Ring Road, for example)
- The facility will contain 3 wash bays
- The facility will operate 24 hours per day, 7 days per week
- The average 24-hour utilisation rate of the facility will be at 25% of its capacity (i.e. of its operating hours) in project year (PY) 2, 38% in PY3, and 50% in PY4 onwards; these estimates reflect the overall estimated demand for the facility (discussed above) and a growing awareness of the facility among truck operators once it is established[24]
- An average wash time for a truck of 94 minutes[25], with water consumption of 71 litres per minute
- The facility will require 1 full-time-equivalent (FTE) employee, who will act as a site manager operator, cleaner and site representative (of the facility owner).

COSTS OF ESTABLISHING AND OPERATING THE FACILITY

Project costs consist of the following components:

- **Capital costs** of establishing the facility, including the cost of preliminary works, construction, equipment and connection of utilities (plumbing, water supply, stormwater management and electricity). The cost of buying or renting land, site preparation and earthworks, establishing access to the site off a suitable heavy vehicle transport road and the measures needed to comply with EPA requirements was not included in the analysis, as they will be site specific.
- **Operation and maintenance (O&M) costs**, consisting of fixed costs (equipment replacement, site maintenance, insurance and professional liability, labour, security and surveillance, removal of dry waste, site power and council rates) and variable costs (water supply and pumping, wastewater disposal, truck disinfectant and Avdata fees)

Cost-related methodology and design assumptions are as follows:

- The capital costs will be incurred in PY1, with O&M costs commencing in PY2
- Site establishment, preliminaries and margins are estimated at 11% of cost of work
- Annual site maintenance cost is estimated at 1% of capital cost
- Annual insurance and professional liability cost is estimated at 1.5% of capital cost
- Unit costs and scales of work were primarily sourced from a large pork processing company which established a facility of the same proportions in recent years.

[24] While the size of the livestock industry in Victoria fluctuates with trends in seasonal feedbase, there is no long-term trend of increased livestock numbers. Therefore, the overall demand for truck washes is expected to remain steady for the duration of the project.

[25] The average wash times for different trailer sizes were established after consultation with a large livestock transport operator and review of truck wash use data. These times reflect desired wash times for different trailer sizes, noting that industry consultations conducted by RMCG suggest that the actual wash times were shorter in practice.

REVENUE FROM THE FACILITY

The new facility is expected to generate revenue by charging truck operators with fees for washing their trailers. Two sets of fees are included:

- A $-per-minute water use fee, as practiced by other truck washes in Victoria
- A flat fee per truck washed, charged on top of a water use fee; this turn-on or entry fee is already being charged at some truck washes

Revenue-related methodology and design assumptions are as follows:

- Revenues will commence in PY2, after the facility is established and commences operations
- A water use fee of $1.50 per minute will be charged during PY2, and $1.80 per minute from PY3 onwards; the lower rate during PY2 is intended to act as a feed-in rate to encourage users;
- A flat fee of $10 per truck will be charged from PY2 onwards
- The above-mentioned fee rates are based on i) fees charged by other truck washes across Victoria[26] and ii) estimated strong demand for the new facility due to its convenient location.
- A further scenario is that the facility could be designed to accommodate non-livestock related vehicles. It could potentially also include facilities that would be needed during disease outbreaks, for example as a location where movement permits could be checked.

4.5 KEY FINDINGS OF FINANCIAL ANALYSIS

Key findings of the financial analysis are discussed below.

SCALE OF OPERATIONS

At the peak of its operations (PY4 onwards), the proposed wash is expected to provide 788,400 wash minutes, use 55,976 kilolitres of water and wash 8,418 trucks per annum. This equates to 23% of total demand for washes of livestock transport delivering to abattoirs in Greater Melbourne. Further detail is provided in Table 4-3 below.

Table 4-3: Scale of operations of the proposed truck wash, 2024–2044

Project year	1	2	3	4-21
Calendar year	2024	2025	2026	2027-2044
Truck wash utilisation rate (% of capacity)	0%	25%	38%	50%
Wash minutes per year	0	394,200	591,300	788,400
Water use per year (kl)	0	27,988	41,982	55,976
Trucks washed per year	0	4,209	6,313	8,418
% of total demand for trucks to be washed	0%	12%	17%	23%

The impact of different utilisation rates of the facility on the number of trucks washed per annum is shown in Figure 4-4. With a 40% utilisation rate (i.e. lower demand), the number of trucks washed decreases from 8,418 to 6,734 per annum (or from 23 to 18% of total demand). In contrast, with a 60% utilisation rate, the number of trucks washed increases to 10,101 (28% of total demand).

[26] These include $0.40-1.78 per minute for water use (sourced from the saleyard operators survey), and a ‘turn-on’ or entrance fee of up to $20 per truck (sourced from industry consultations).

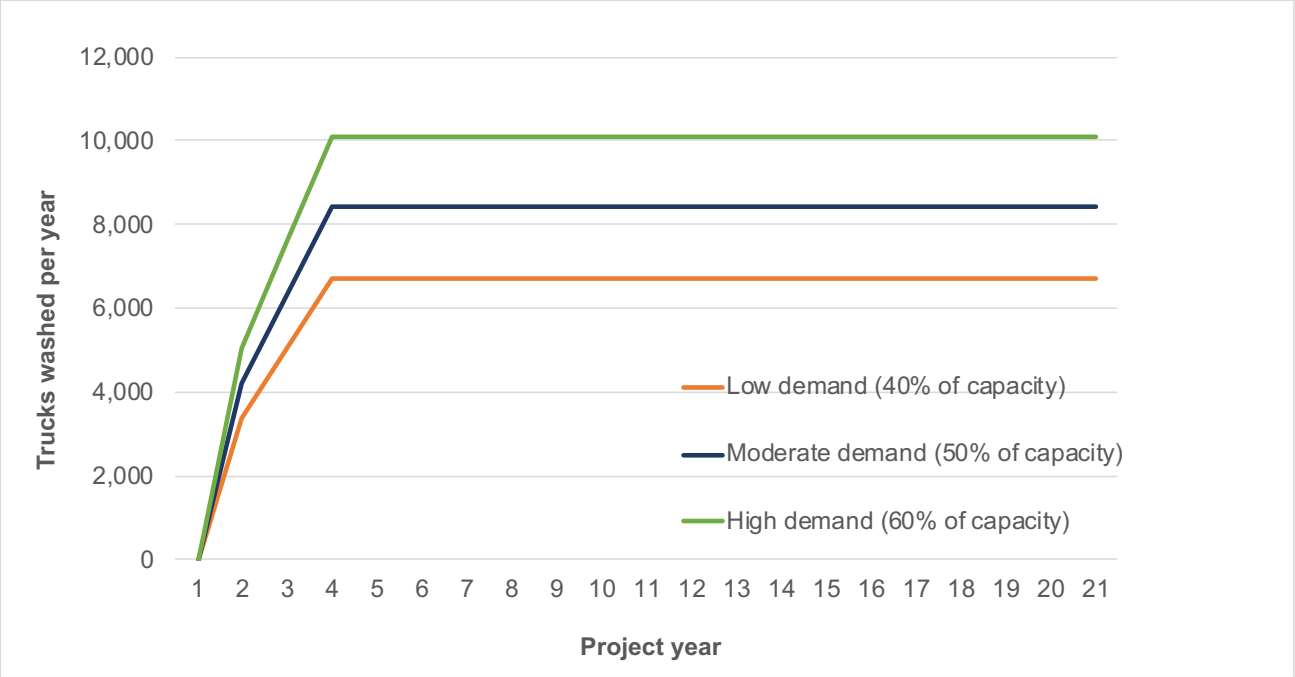


Figure 4-4: Number of trucks washed per year under different demand levels for the facility

PROJECT COSTS

Capital costs are estimated at $3.1m, with construction, plumbing, water supply and stormwater management infrastructure as the largest cost items. Peak O&M costs (PY4 onwards) are estimated at $789,270 per year, with labour, water supply fees and Avdata fees as the largest cost items. Further details of the costs are provided in Table 4-4 and Table 4-5.

Table 4-4: Capital cost of the proposed truck wash

Cost item	Unit cost ($)	Quantity	Total cost ($)
Construction and builders' margin	625,976	1	625,976
Access from public road (minor roadworks only)	315,300	1	315,300
Concrete, including aprons and approaches to site	380,252	1	380,252
Precast panels (walls)	134,528	1	134,528
Structural steel	105,100	1	105,100
Roof and roof plumbing	63,060	1	63,060
Armco traffic railing around the site	18,918	1	18,918
Electrical and surveillance equipment (TV intercom, cameras, etc.)	124,018	1	124,018
Plumbing, water supply and stormwater management	414,830	1	414,830
Pressurised water supply and disinfectant system	304,790	1	304,790
Controlled security gate and fencing	55,598	1	55,598
Site office, change rooms, showers and isolation rooms	105,100	1	105,100
Connection of services (mark-up based on site location)	42,040	1	42,040
Industrial solar installation	105,000	1	105,000
Sub-total (work at costs tendered)			**2,794,509**
Site establishment, preliminaries and permits	2,794,509	11%	307,396
Total capital cost			**3,101,905**

Table 4-5: O&M cost of the proposed truck wash, 2024-2044

Project year Calendar year	1 2024	2 2025	3 2026	4-21 2027-2044
Supplying water to tank ($)	0	86,097	129,146	172,195
Water pumping ($)	0	4,478	6,717	8,956
Wastewater disposal ($)	0	83,965	125,947	167,929
Truck disinfectant ($)	0	0	0	0
Avdata fees ($)	0	63,457	112,747	150,330
Subtotal - variable cost	0	237,997	374,557	499,410
Subtotal - fixed cost	0	289,860	289,860	289,860
Total O&M cost ($)	**0**	**527,857**	**664,417**	**789,270**
Total O&M cost per wash minute ($)	**0**	**1.34**	**1.12**	**1.00**
Total O&M cost per truck washed ($)	**0**	**125.41**	**105.24**	**93.76**

PROJECT REVENUES

Peak revenues (PY4 onwards) are estimated at $1.50m per year. Water fees account for 94% of total revenue, and the average revenue per truck washed is $178.6. Further details of the revenues are provided in Table 4-6 and Figure 4-5.

Table 4-6: Revenues of the proposed truck wash, 2024–2044

Project year Calendar year	1 2024	2 2025	3 2026	4-21 2027-2044
% of water fee charged	0	84%	100%	100%
Water fee charged ($/minute)	0	1.50	1.80	1.80
Revenue from water fees ($)	0	592.483	1,064,340	1,419,120
Revenue from truck fees ($)	0	42,089	63,133	84,178
Total revenue ($)	**0**	**634,572**	**1,127,437**	**1,503,298**
Total revenue per wash minute ($)	**0**	**1.6**	**1.9**	**1.9**
Total revenue per truck washed ($)	**0**	**150.8**	**178.6**	**178.6**

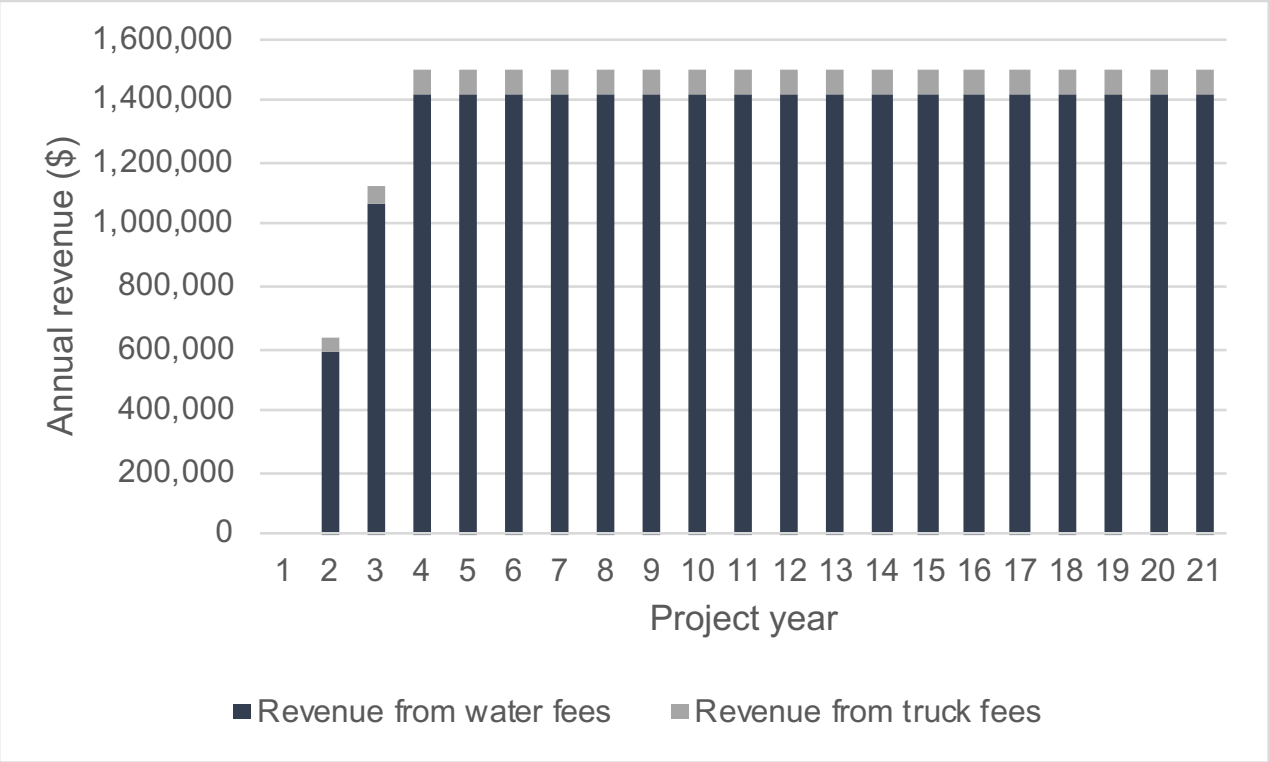


Figure 4-5: Revenues of the proposed truck wash by source, PY1-21 (2024–2044)

FINANCIAL VIABILITY

Based on assumptions on demand (or level of use) and wash fees, key findings on the financial viability of the proposed facility are presented in Table 4-7: Financial viability of the proposed truck wash, 2024–2044 and discussed below.

Table 4-7: Financial viability of the proposed truck wash, 2024–2044

Project year **Calendar year**		**1** **2024**	**2** **2025**	**3** **2026**	**4-21** **2027-2044**
	NPV ($)				
Capital cost ($)	*$2,898,977*	3,101,905	0	0	0
O&M cost ($)	*$7,484,274*	0	527,857	664,417	789,270
Total cost ($)	*$10,383,251*	3,101,905	527,857	664,417	789,270
Revenue from water fees ($)	*$13,039,010*	0	592,483	1,064,340	1,419,120
Revenue from truck fees ($)	*$779,500*	0	42,089	63,133	84,178
Total revenue ($)	*$13,818,510*	0	634,572	1,127,473	1,503,298
Net cash flow before tax (EBIT) ($)	*$3,435,259*	-3,101,905	106,714	463,056	714,028
Tax payable ($)	*$1,900,271*	0	32,014	138,917	214,208
Net profit after tax ($)	*$1,534,988*	-3,101,905	74,700	324,139	499,820
Profit margin		0.0%	11.8%	28.7%	33.2%
NPV ($)	**$1,534,988**				
IRR	**12.5%**				

Applying a 7% discount rate (recommended by DTF for new investment projects) provides an NPV of $1.53m and an internal rate of return (IRR) of 12.5%. Net profit after tax is estimated at $499,820 per annum from PY4 onwards. While there is a large capital outlay in PY1 ($3.1m), the operating surplus from PY4 onwards could be seen as a commercial proposition (33.2%).

A sensitivity analysis was performed to identify how changes in key parameters influence the customer revenue from and cost of operating the proposed facility. Results are presented in Table 4-8, and show that financial viability of the project is resilient to substantial increases in key cost parameters, including a 25% increase in capital or O&M costs.

Table 4-8: Sensitivity analysis

Scenario	NPV	IRR
Base case	$1,534,988	12.5%
Capital cost increased by 25%	$810,244	9.5%
Annual O&M cost increased by 25%	$218,624	7.8%
Average 24-hour utilisation rate is 40% of capacity	$246,411	8.0%
Average 24-hour utilisation rate is 60% of capacity	$2,823,566	16.5%
A capital contribution of $1m from the government	$2,469,568	18.7%

Sensitivity indicators and switching values - NPV	Base case	Sensitivity indicator*	Switching value (absolute)^	Switching value (% change)^
Average 24-hour utilisation rate (% of capacity)	50%	4.20%	38.09%	-23.82%
Operating hours per day	24	4.20%	18.28	-23.82%
Capital cost ($)	3,101,905	-1.89%	4,744,342	52.95%
Peak O&M cost ($/year)	789,270	-3.41%	1,018,676	29.07%
Cost of supplying water to tank ($/kl)	3.1	-0.73%	7.3	137.25%
Water fee ($/minute)	1.80	5.35%	1.464	-18.69%

** The ratio of the percentage change in the NPV to the percentage change in the variable tested*
^ A switching value for each key variable is its value at which the NPV becomes 0

Notably, a capital contribution from government and/or industry makes a substantial difference to the project's financial viability. For example, a $1m contribution (approx. one-third of total capital cost) would increase the NPV to $2,469,568 and IRR to 18.7% (up from 12.5%), which could be viewed as an attractive commercial return to a potential investor.

Figure 4-6 presents cumulative NPVs for different levels of capital contributions. Without a contribution, the investment becomes profitable (at a discount rate of 7%) only in PY12; in contrast, with a contribution of $3m, this break-even point is reached in PY3.

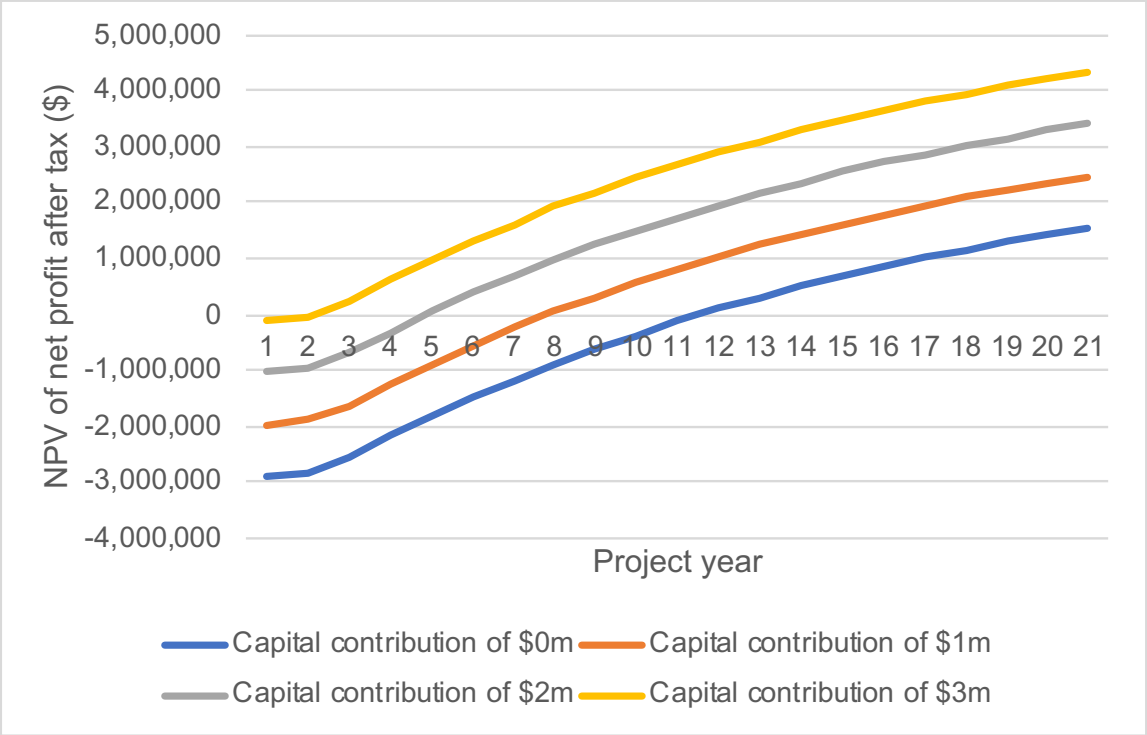


Figure 4-6: Cumulative NPVs under different capital contributions

It should also be emphasised that land costs and significant roadworks to allow vehicles to safely enter and leave the site are not included in the current calculations. If the required 1.5 ha of land would need to be purchased by the investor, the project is unlikely to be financially viable.

Among key factors in determining the success of the facility, the utilisation rate of the facility (as a % of capacity) contains the highest degree of uncertainty, whilst also having a very strong impact on profitability. Figure 4-7 presents cumulative project value (expressed as NPV) for different utilisation rates (40%, 50% and 60%), highlighting the importance of utilisation. For example, with a 40% utilisation rate, the investment does not become profitable (with a discount rate of 7%) until PY19; in contrast, a 60% utilisation rate means that the investment is profitable by PY9.

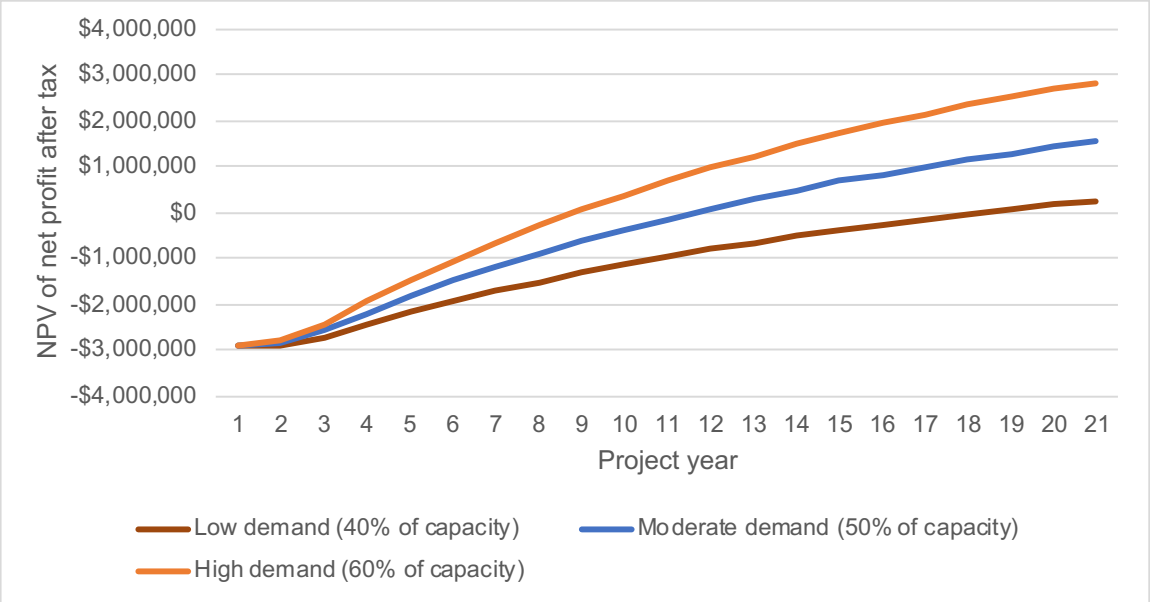


Figure 4-7: Cumulative project value (NPV) under different facility utilisation rates

5 Conclusions

Improving Victorian biosecurity with a strategic investment in a key facility

The study found strong evidence of a functional regional and rural truck wash network serving the needs of the livestock industry across Victoria, other than in close proximity to Greater Melbourne.

The probable closure of the Geelong truck wash and the isolation of other sites relative to metro Melbourne abattoirs has generated a need to consider approaches to secure a truck wash facility to meet the needs of trucks delivering stock via Melbourne's Western Ring Road and Hume Freeway.

Augmentation of the Victorian statewide truck wash network with the timely construction of a well-designed truck wash with easy access for all vehicle types to the Western Ring Road or Hume Freeway is unlikely to thrive as a standalone investment and operation. However, if a suitable site was made available and a significant contribution made towards the capital expenditure required to develop a modern facility, financial modelling demonstrates that a new facility could be self-sustaining. Estimates of existing unmet demand for washing by livestock carriers delivering to and travelling through the metropolitan area, coupled with a commercial charging rate (within the bounds of current rates charged) for customers, indicate that a new facility could be a commercial proposition for an operator. The benefit of a new facility in the context of a future emergency disease response also needs to be considered.

A well-designed and located facility within a short detour from the Ring Road or Hume Freeway is likely to have a high utilisation for three main reasons:

- Significant driving time and fuel cost savings for some operators, possibly detouring up to 60 kms to use public truck washing facilities. Livestock transport is a highly competitive industry and as operating costs increase and trucks become larger, minimising the costs per hour of downtime for owners and operators of these vehicles becomes even more important.
- Significant wash time savings will be realised when trucks can wash their trailers a short time after animals are delivered to Melbourne metro abattoirs. Time and effort savings will be substantial compared to washing trucks after animal waste is baked on, following travelling a substantive distance to a truck wash or return to the town of vehicle origin, sometimes hours away.
- Washing trucks utilising ideal design pressure on a well-designed slope to make removal of solid waste relatively easy can also save significant time when compared to washing trucks at poorly designed wash sites at a rural transport company depot or at a low-throughput public facility with inadequate wash volume and pressure.

There would also be material waste management benefits. Reduced travel distances to wash trucks after deliveries reduce the risk of spilling animal waste on public roads and, at the wash site, extracted liquid waste disposed to a Municipal WWTP provides improved biosecurity (relative to more informal arrangements at some smaller and/or trucking company owned facilities).

Truck washes generate waste (liquid manure and solid manure) and operators must comply with environmental laws. Where the wastes can be responsibly transferred to a licensed operator (e.g. a water authority or a licensed composting facility), the truck wash operator may not need to hold a license or permissions, but they must always observe their general environmental duty. In most cases, truck washes were found to be integrated with a larger activity (being a saleyard or abattoir) for which waste and environmental compliances permissions and management requirements are set out clearly in the environmental legislation.

A stop-gap measure could include consideration of establishing dedicated effluent dumps as roadside facilities along main transport routes where most needed, so that tanks could be emptied without a full wash out. The costs of establishing and maintain such a facility has not been calculated but is likely to be considerable.

Providing a new truck wash facility was well located and designed, and was constructed reasonably promptly, this investment would be a significant step towards improving biosecurity safety for the Victorian livestock industries, particularly as a mitigation measure in the context of a disease outbreak response[27].

Financial analysis

Based on assumptions on demand (or level of use) and wash fees, the financial analysis indicates that a three-bay truck wash on the outskirts of Greater Melbourne would be financially viable over a 20-year operational period if the land was provided to the operator free of charge. Using a discount rate of 7%, this investment is projected to deliver a moderate Net Present Value (i.e. a NPV of $1.53m) and Internal Rate of Return (or IRR of 12.5%.) for the investor or operator. Importantly, these returns are dependent on a well-located and large site being made available at no cost to the investor and/or operator.

The revenue expected from the large number of livestock carriers returning from drop-offs to metro abattoirs is reasonably attractive; however, the required capital outlay in PY1 ($3.1 million) to develop a modern wash facility may deter most private investors.

Consequently, a government or industry contribution towards not only the provision of a site but also contributing a proportion of the required construction cost may significantly increase the attractiveness of the project to private investors and/or operators.

Key factors influencing the financial viability of the facility are its capital and O&M costs (including Avdata fees and the cost of water and electricity to enable a reliable pressure wash, waste treatment and disposal), its utilisation rate, and truck wash fees charged. Of these, the utilisation rate contains the highest degree of uncertainty and hence should be investigated further through undertaking more detailed consultation with potential users or user groups.

The current model assumes zero land costs. Given the substantial land area required (1.5 ha minimum) and high land prices in Greater Melbourne and surrounds, a clearer understanding of potential sites that could, for example, be made available by government with good vehicle access, appropriate zoning is needed.

A commercially viable option could be where an existing service station operator in a suitable location was seeking to utilise excess or available land to extend truck-washing services to the livestock and general freight industry. Government land could also be provided, potentially with industry contributing to the construction costs.

It should be noted that the wider benefits of this investment in terms of the contribution of a new site and facility to reducing risks during an animal disease outbreak were not quantified for this study. A business model that included substantive government and livestock production/meat processing industry control over the facilities operations would be necessary for the industry to capitalise on the emergency disease management benefits.

Given the likely time needed to secure a site, complete construction, and commission such a facility, investment prior to an outbreak occurring is recommended. It would be difficult to establish an emergency facility near metro Melbourne in the short period that a serious disease outbreak takes to cause an industry-wide standstill and significant economic loss.

Biosecurity

As part of national Emergency Animal Disease (EAD) response planning, potentially as part of AUSVETPLAN, the risks and best practical responses to future disease outbreaks need to be better understood in relation to how well managed truck washing facilities can be utilised in concert with a range of actions to reduce the risk

[27] Noting that the response will vary significantly depending on the actual disease identified.

of disease spread. This would include what short term modifications to services and monitoring of truck washing services can be applied and how these updated facilities are best utilised in the period when lifting industry wide standstills and permit arrangements for low-risk movements are being planned. Scenario planning and a trial of a planned response may assist the industry prepare and highlight the role of the state's current and/or augmented truck wash facilities.

This should be progressed by Agriculture Victoria through Animal Health Australia and occur as part of (EAD) response planning at the national level and recommendations will be disease specific.

Next steps

The next steps that will progress the augmentation of Victoria's truck wash network include:

1. After industry consultation, develop a guide (rather than an industry a standard) to preferred truck wash design and washing practices, that includes minimum requirements for their operation and maintenance
   - noting that a definitive design guide for 'truck wash facilities' was not an output of this study but rather, observations were made of current design and practice in newer facilities that could meet minimum standards for truck washes based on current industry expectations on biosecurity and other matters
   - further investigate any gaps in current industry practice including time taken to wash trucks relative to recognised good practice, the incidence of livestock transport vehicles washed at sites other than truck washes, the quality of these sites and their wastewater practice
   - consider incentives and education including communications material for industry e.g. YouTube video(s) on 'best practice' truck loading, cleaning and biosecurity to raise the standard of truck wash facilities, truck washing practice and pre-loading practice by producers.
2. Consideration of a further study on the feasibility and cost of establishing a dedicated effluent dump in the Greater Melbourne area to complement a future truck wash/effluent facility.
3. Consideration of these logical steps outlined in the following checklist to enable the timely development of a new facility in proximity to Greater Melbourne, including[28]:

Stage 1: Further government agency and industry consultation and development of a site-specific needs analysis

- Consultation with stakeholders including livestock transporters, and others in the broader freight industry (also potential customers of a new wash facility)
- Identify potential investment partners from within and outside government, noting that co-investment from industry and government (particularly with securing a site) will be required and a formal EOI process adopted to involve commercial partners (e.g. a large service station operator)
- Confirm available sites in the target area that meet industry needs noting the significant area needed to provide the service and biosecurity needs now and in future. This should include assessment of availably of government owned land
- Further assessment of the specific needs that a new truck wash should meet, particularly the elements most valued by operators and that are likely to be needed to address current and potential future biosecurity requirements.
- Prepare a project Scope of Works
- Preliminary design consultation to confirm site, design capacity and configuration of facility and associated access, parking, site facilities etc.

[28] This list is a modified version of project stages outlined in Transport NSW Truck Wash Information guide, December 2021.

- Assessment of required and design throughput capacity, facility design options, key equipment providers, and confirm the economic and financial feasibility of the project (this studies analysis is high level only)
- Assessment of compliance of the facility with (all) regulatory authorities and required approvals
- Complete cost estimates and works program for road works, required wash equipment, and construction.

Stage 2: Application for co-funding / development of funding and operations model

- Develop a clear case for co-funding by government and / or industry
- Complete an investment ready Benefit Cost Analysis that will meet the requirements of the site-owner and potential investors
- Gather documents that meet the required standards for submission to investors i.e. preliminary design/specifications, confirmation of site zoning, certified estimate of cost to construct, statement relating to long term lease of nominated truck wash site, letters of support from partners including the potential operator
- Consider potential business models for its operation e.g. government owned facility with a commercial operator.

Stage 3: Final design and costing

- Complete a geotechnical investigation and/or evaluation of available geotechnical data for the site
- Prepare design drawings, with a focus not only on a modern, easy-to-use facility, but also the safety of operators, and the compliance of the facility in regard to water use efficiency and modern effluent management
- Submit design for approval to relevant council and road authorities
- Confirm the full cost breakdown for the key equipment required including water storage, waste disposal, and the required pumps for washing, waste management and other equipment
- Confirm specific equipment specifications and process instructions with preferred supplier, as required.

Stage 4: Procurement and construction

- Together with a project management/construction specialist complete procurement, manage site delivery, and confirm the coordinated construction program based on requirements
- Form a Project Control Group or PCG representing key investors and stakeholders to meet regularly during the construction and commissioning phase to confirm construction and delivery is on-track.

Stage 5: Construction and commissioning compliance

- Submit design and construction documentation to the relevant local authority
- Coordinate authority inspections, as applicable
- Retain construction drawings and project documentation on completion for future records and maintenance
- During construction and delivery of equipment, develop an operating manual based on equipment supplier specifications and recommendations.

Stage 6: Operation and maintenance

- Tt is the responsibility of the truck wash owner or the nominated partner providing site operations management to ensure the effective operation of the truck wash
- Regularly consult with industry to maintain confidence the facility is meeting industry and biosecurity needs of operators and state agencies.

Appendix 1: Truck wash case studies

As part of the *Truck Wash and Effluent Disposal Review Project*, RMCG visited a selection of sites. This document provides a summary of information gathered for those sites to give the reader an appreciation for a sample of truck washes – their location, infrastructure and operation.

The case studies are not meant to be an exhaustive inventory of all relevant information but provide substantiated background and data to inform the reader of the main report.

The truck wash sites were:

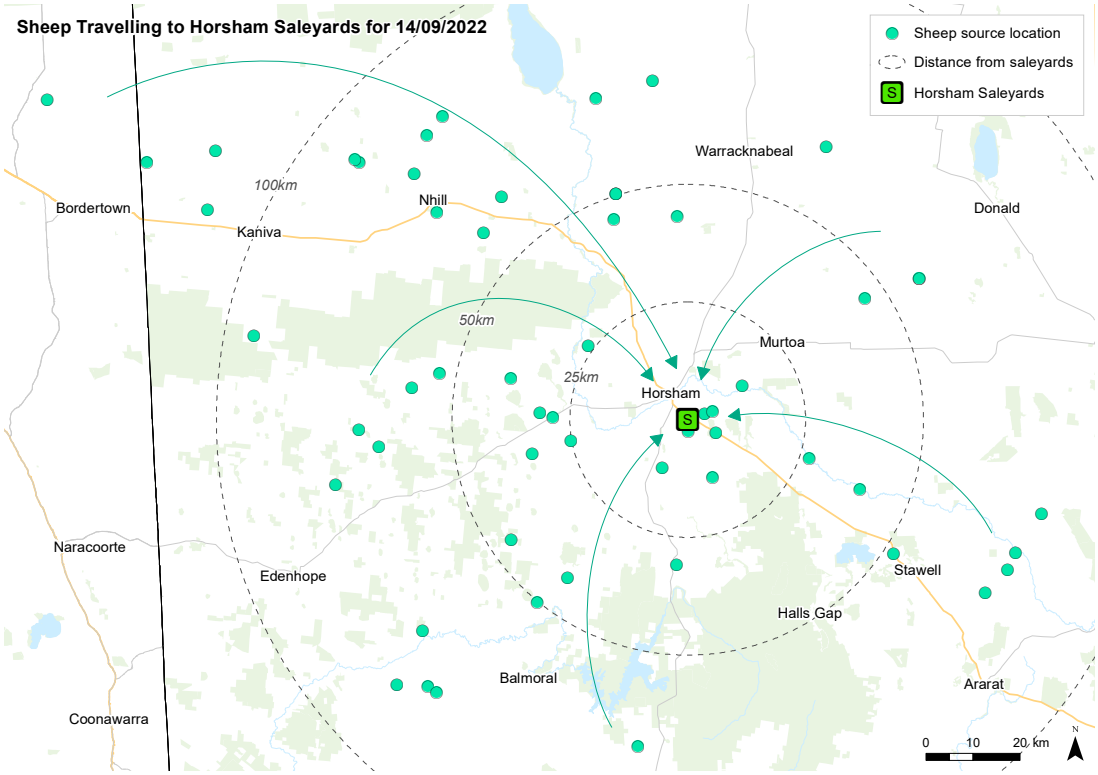
1. Horsham Regional Livestock Exchange
2. Ouyen Livestock Exchange
3. Big River Pork Abattoir, Murray Bridge, SA
4. Wycheproof Saleyards
5. Echuca and District Livestock Exchange
6. Kyneton Saleyards
7. Former Geelong Saleyards

1. HORSHAM

The Horsham truck wash is located within the Horsham Regional Livestock Exchange, a site that is set in a rural area approximately 10 km south of Horsham. (refer Map 1). The nearest truck wash is Warracknabeal, ~ 45 km north.

The saleyard is one of the five largest sheep sale centres in Victoria, with approximately 300,000 transactions each year. Sale transactions have been falling, i.e. almost 40% over the past four years, from 478,000 head in 2018/19.

There is a weekly sheep and lamb sale with livestock coming in almost as far as Keith, SA, with most coming in from within a 100 km radius, as indicated in this map of actual movements for a sale day in September 2022.



Source: NLIS data Agriculture Victoria: September 2022

The truck wash is around 22 years old and consists of two relatively narrow bays with no separation barrier (refer Photo 1). The site is controlled and operated by Avdata National Truckwash System (avdata). Hoses are not provided; however, three sizes of hose outlets are provided.

An effluent dump is also in place (refer Photo 2) utilising a “cattle ramp” style grid through which the effluent can be dropped out of the truck effluent tank. This is one of the few dedicated effluent sump dump structures available to livestock trucks in Victoria. Other sites permit trucks to empty their sumps in the truck wash bay itself but do not have a dedicated structure.

Waste from the truck wash and the effluent dump flows to a baffled settling area (refer Photo 3), from where the excess wastewater is pumped to a series of wastewater ponds, where it is treated and evaporated. Solids from the settling area are removed periodically (weekly) with a skid-steer machine and stockpiled on site.

Manure from the nearby saleyard area is treated along with the truck wash and effluent dump waste.

Rainwater tanks in place near the truck wash store water captured from the covered saleyard roof for use in the truck wash. It’s also connected to town water supply.

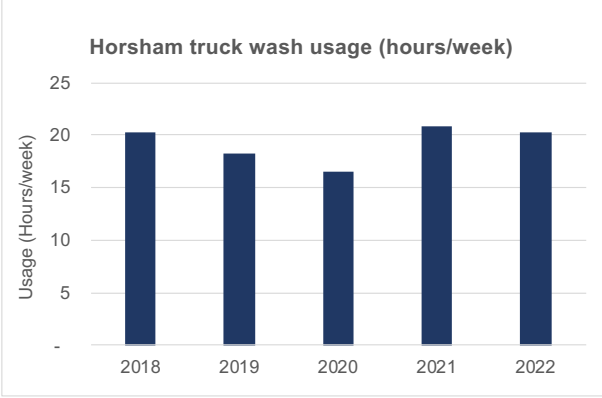
ATTRIBUTE SCAN

Facility attribute	Present
Hoses	X
Nozzles	X
Detergent	X
Disinfectant	X
Warm or hot water	X
Shelter/overhead roof	X
Walled bays	X
Toilets	√
Shower/change room	√
Access attribute	
Extended-period truck parking	√
Open all hours (24/7)	√
Security (CCTV)	√
Larger than B-Double access	X
All heavy vehicle types	X

USAGE

Avdata usage information for the Horsham facility, 2022

Usage factor	Data
Busiest days	Tues, Wed
Busiest months	Springtime: Sept-Nov
Hours/year	1052
Hours/week	20
Average use time	73 mins
No. trucks/year	880
No. trucks/week	17



The truck wash is 24-hour access and is open to livestock vehicles only and up to B-Double size. Operators estimated that between 20 and 50 vehicles used the truck wash each week. 2022 avdata indicated that over the entire year, an average of 17 trucks used the site each week, concurring with the operators estimate.

There was no trend in usage observed over the past five years outside seasonal variability, indicating steady usage, dipping during the height of Covid-19 in 2020.

The main customer groups were identified as livestock carriers washing after deliveries to regional abattoirs (for example, in Ararat), then feedlots, and then deliveries associated with saleyard process. Operators estimated that around 20 trucks enter the site on sale days, but only 10% of these use the truck wash.

Congestion at the wash was reported as light. Relative to some other sites in Victoria, the Horsham truck wash has a relatively moderate level of use, evidenced by stakeholder consultation and a comparison of Avdata collected from a selection of sites in Victoria (refer to section 3.2 in the report body).

It was reported that the truck wash does not generate sufficient revenue to cover maintenance and operating costs.

The key characteristics of the Horsham truck wash site were rated by representatives from the Livestock and Rural Transporters Association Victoria (LRTAV), and results are summarised below (ratings out of 3).

No. Bays	Water pressure & volume	Water quality	Slab slope	Lighting	Access (from highway)	Driver facilities	Overall assessment
2	2	2	3	2	3	2	2

Livestock transporters rated the facility overall as being adequate. All features were deemed to be of an acceptable standard or above, with the slab slope and accessibility regarded as very good.

CONCLUSION

The Horsham facility meets the demand for truck washing in this part of western Victoria. It has a moderate level of use within Victoria's network. The wash is functional, and all basic facilities (toilets and showers) are provided for drivers. While sheep transactions at sale days have been declining, the saleyards remain an important hub for sheep sales in the Wimmera, pulling in sheep transported a substantial distance on a weekly basis.

HORSHAM

Map 1: Horsham truck wash location

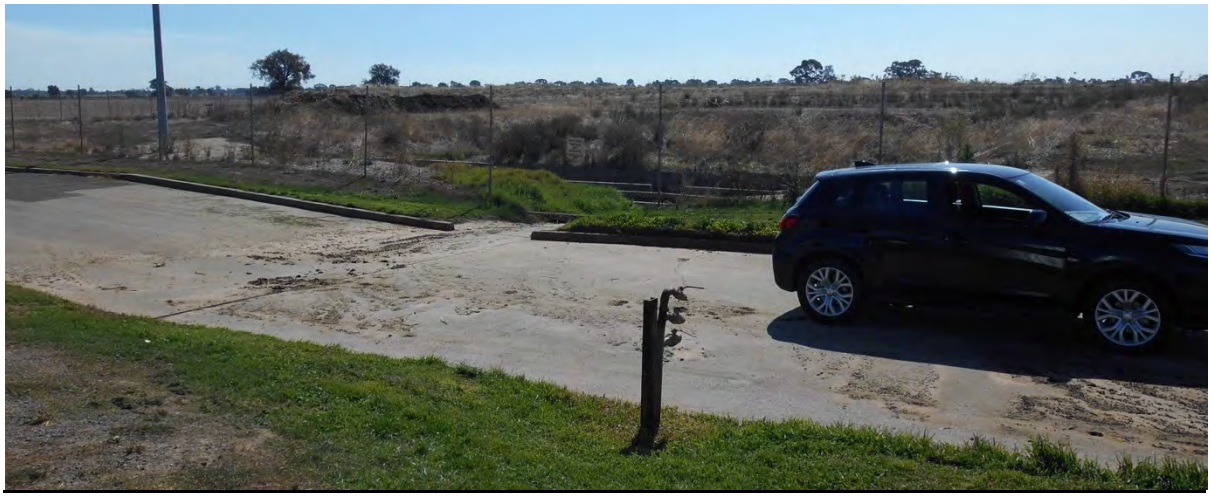


Photo 1: Horsham truck wash bay and effluent pits indicating narrow bays and no separation between two bays

Photo 2: Horsham dedicated effluent dump

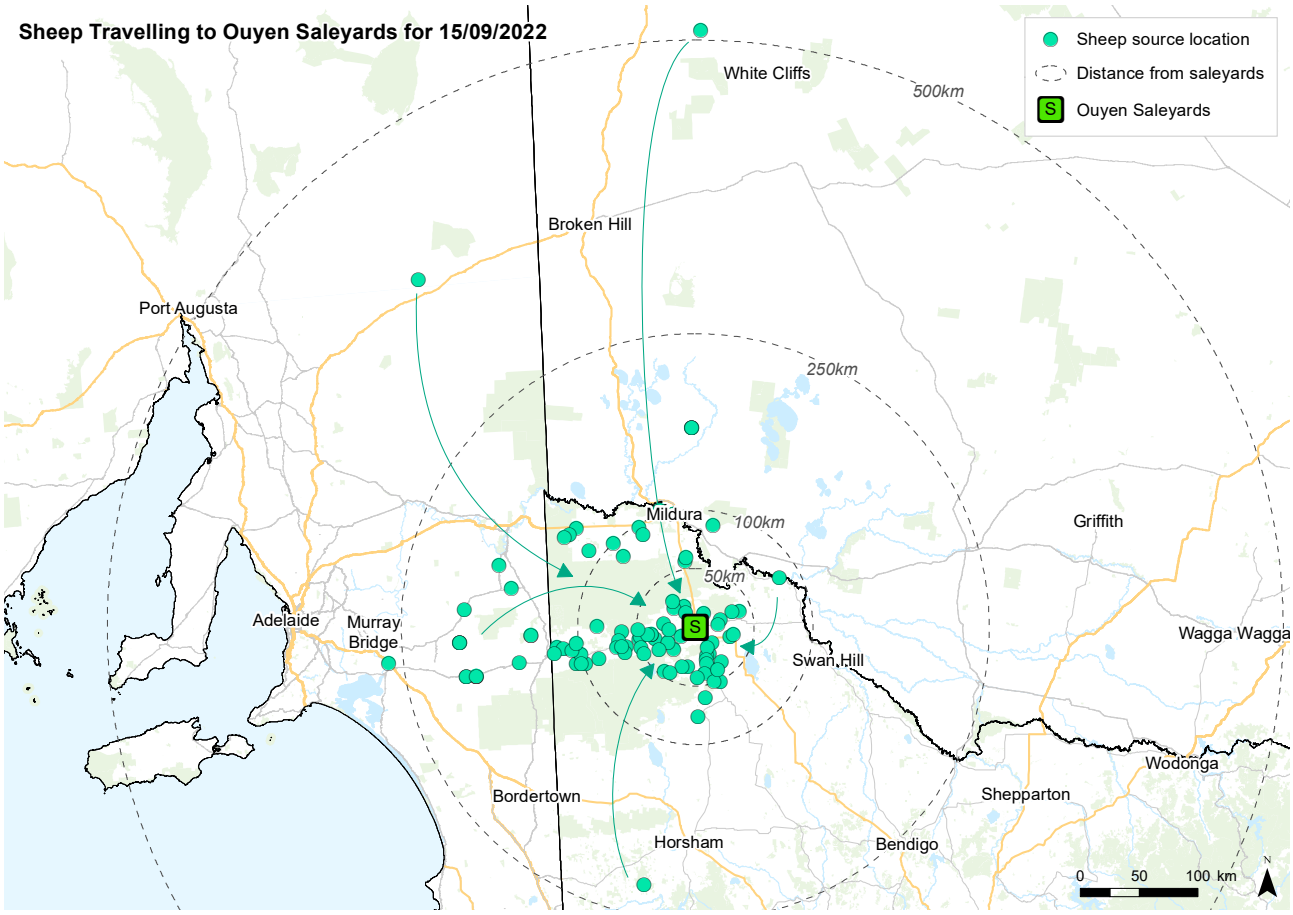
Photo 3: Baffled setting area within wastewater management system to enable ease of removal of dried solids stockpiled in the background

2. OUYEN

The Ouyen truck wash is located within the southern part of the Ouyen Livestock Exchange. (refer Map 2) The whole site is within the built-up part of the Ouyen township. The closest truck wash is Swan Hill, 150 km away.

The truck wash in Ouyen was built as part of a saleyard redevelopment in 2015. It's one of the five largest sheep sale centres in Victoria, with a steady 200,000 transactions each year.

There are 20 sale days per year drawing sheep from mostly within a 100 km but out to a 250 km radius of Ouyen, as indicated by this representative sale day in September 2022.



The truck wash consists of two relatively narrow bays, with no separation barrier.

Hoses and nozzles are provided, and while the pressure is set to 8 bar (800 kPa) and cannot be changed, the nozzles can be used to vary the flow rate (refer Photo 6). Raw water from the GWMWater channel network is used for washing.

Wastewater from the truck wash area drains via a channel to a settling pit (refer Photo 5). Water from the settling pit is pumped to the GWMWater town sewerage system. Solids from the pre-treatment area are stockpiled on site and taken away for vermiculture.

The bays have good slope. The walls of the truck wash were added after construction (refer Photo 4). Effluent dumps are allowed, as well as normal truck washing. It is one of the few washes across Victoria that can accommodate road trains.

The facility cost $600,000 to build when originally installed in 2013/14. Access to the saleyard compound and the truck wash operation is via Avdata access key.

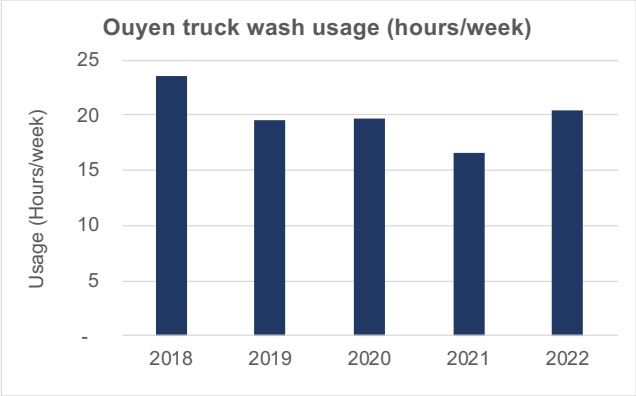
ATTRIBUTE SCAN

Facility attribute	Present
Hoses	√
Nozzles	√
Detergent	X
Disinfectant	X
Warm or hot water	X
Shelter/overhead roof	X
Walled bays	√
Toilets	√
Shower/change room	√
Access attribute	
Extended-period truck parking	√
Open all hours (24/7)	√
Security (CCTV)	√
Larger than B-Double access	√
All heavy vehicle types	√

USAGE

Avdata usage information for the Ouyen facility, 2022

Usage factor	Data
Busiest days	Wed, Thurs
Busiest months	August, September
Hours/year	1067
Hours/week	21
Average use time	59 mins
No. trucks/year	1156
No. trucks/week	22



On average 22 trucks use the truck wash per week, meaning Ouyen is a relatively moderate use facility in comparison with other sites across Victoria. Wednesday and Thursday were the busiest days on average according to Avdata usage information over the past five years.

There was a downward trend in usage measured between 2018 and 2021 (26% over four years) however there has been some recovery over the past 12 months at the site.

As well as the sheep transports which bring stock to and from the adjacent market, grain trucks and goat transports also frequently use the Ouyen site. The bulk of the usage of the facility is not associated with sale days and only 30% of trucks associated with the sales process were reported to wash their trucks (estimated to be ~6 trucks being washed per sales day).

The level of congestion was reported as medium during peak times by the saleyard operator. This level of congestion was not found to be high enough to result in trucks turning away due to expected wait times.

It was estimated and reported by the operator that the truck wash generates sufficient revenue to cover maintenance and operating costs.

The characteristics of the Ouyen truck wash site were rated by representatives from the LRTAV, and the results are summarised below (ratings out of 3). [Draft note: ratings incomplete]

No. bays	Water pressure & volume	Water quality	Slab slope	Lighting	Access (from highway)	Driver facilities	Overall assessment
2	3	3	3	-	-	-	-

CONCLUSION

The Ouyen truck facility is a moderate usage site within Victoria's network and meets the demand for this part of Victoria. Most of the usage is from livestock trucks passing through the region rather than from trucks as part of the sale day process. The wash is functional and rated highly by users on several key attributes, including water pressure, water quality and slab slope. Sheep transactions on sale days have remained steady, putting the operation in good stead to remain open in future.

OUYEN

Map 2: Ouyen truck wash location

Photo 4: Ouyen truck wash bays, effluent channel and effluent pre-treatment area

Photo 5: Ouyen truck wash showing walls, lighting, slope and water hose

Photo 6: Ouyen truck wash showing walls, lighting, slope and water hose

3. MURRAY BRIDGE (SA)

The Big River Pork abattoir truck wash is a privately owned facility located adjacent to and integrated with the abattoir (refer Map 3) located approximately 15 km south of Murray Bridge in South Australia.

The facility is new, having commenced operation in late 2022. Its many features can be summarised as follows:

- The facility is not open to the public. Exclusively for use for those delivering pigs to the abattoir.
- Drying trucks with heat was looked at as an option but was not implemented due to the extremely high cost.
- The facility has 24/7 video and attendant security.
- The three bays (refer Photo 7) are all designed to cater for B-Double vehicles, which can take approximately 90 minutes to wash.
- Fully sealed entrance and exit roads (refer Photo 8).
- Daily throughput is approximately 16 vehicles.
- Water supply is from the Murray River treated and then stored in a 250,000L tank (refer Photo 13).
- Wash hoses and nozzles are provided. These are fitted to the walls and a roof-mounted gantry system. Safety step ladders with platforms are also a feature (refer Photos 9 & 10).
- The facility operates at 8bar (800 kPa) pressure, with the variable nozzles providing a range of flow rates from 60 L/minute up to 230 L/minute (refer Photo 12).
- Avdata is used as a convenient way to charge users. Rate is $1.00/minute.
- A Supervisory Control and Data Acquisition(SCADA) system is also in place to monitor and confirm system performance remotely.
- Once washed, disinfectant (diluted “Terminator”) can be applied to the cleaned vehicle from a separate lower-pressure hose (refer Photo 14).
- Shower and toilet facilities are planned, as is a segregated “green” zone, with hazmat suits and sanitiser boots provided.
- The concrete floors are high-specification concrete with rolled-in hardening applied during the pour. The approach bays are 80 mm thick high-specification bitumen.
- Solids in the wastewater are thickened on-site in a screw press (refer Photo 11). Wastewater from the screw press flows into the larger abattoir wastewater system, where it is treated before being used to irrigate farmland.
- Stormwater from the uncontaminated paved areas is collected in a small dam, where it settles before being discharged off-site. Stormwater debris filter baskets are fitted to the side entry stormwater pits to reduce the solids load on the stormwater dam and catch any gross contamination or litter.
- Replacement of damaged hoses is proving to be expensive. Each reel costs $5,000. Currently trialling silicone hose.
- The design of the wash components was done by Speedywash Australia Pty. Ltd, a recognised specialist in high-pressure industrial wash systems.

Map 3: Murray Bridge truck wash (at the time of aerial photo, site was under construction), with abattoir to the northeast and wastewater reuse irrigation to southeast.

Photo 7: Murray Bridge truck wash showing bays, stormwater pit and water storage tank

Photo 8: Murray Bridge truck wash showing sealed entrance and exit roads

Photo 9: Murray Bridge truck wash showing concrete floor with grated main drain, concrete walls, steel roof, main wash reels (wall and roof mounted) and wall-mounted disinfectant reel

Photo 10: Murray Bridge truck wash showing wash reels and safety step ladder and platform

Photo 11: Murray Bridge truck wash showing solids removal auger and modular skip for removal off-site

Photo 12: Murray Bridge truck wash pressure pump and supply manifold, including backup pump

Photo 13: Supply tank (250,000 L) providing primary treated Murray River water for the truck wash

Photo 14: Controls for post was disinfectant application

4. WYCHEPROOF

The Wycheproof truck wash is a basic facility and contains two open bays without separation for use (refer Photo 15). The concrete stab is only long enough for a single trailer. Drivers can back in a B-Double trailer when conditions are dry, however, it's harder to use the site when there are wet conditions.

The site is located on the edge of town, near the Wycheproof Saleyards (refer Map 4). Wycheproof is known as a significant store sheep selling centre in central Victoria.

The site is a relatively small saleyard in comparison with other sites across the state and holds 4-6 sale days annually, with a total of 40,000 transactions occurring each year. Both the number of sale days and transactions are remaining relatively steady year by year.

It is connected to Avdata and can accommodate up to B-double sized vehicles. Water pressure is reported to be adequate; the facility is open 24/7 and is open to all vehicle types.

Lights are installed, and it was reported as one of the few facilities where hot water and detergent are available. The facility's water source is town water.

The facility does not accept sump emptying, and wastewater management was not investigated. The facility and its entrance/exit are cleaned via pressure wash every 2-3 months.

WASH ATTRIBUTE SCAN

Facility attribute	Present
Hoses	√
Nozzles	√
Detergent	√
Disinfectant	X
Warm or hot water	√
Shelter/overhead roof	X
Walled bays	X
Toilets	√
Shower/change room	√
Access attribute	
Extended-period truck parking	√
Open all hours (24/7)	√
Security (CCTV)	X
Larger than B-Double access	X
All heavy vehicle types	√

USAGE

Avdata was not made available for the study for this facility, so no trend data is reported.

Less than 20 trucks were reported to use the facility each week (in the operators' survey), which indicated that it was a lower-use site in the network.

The main users of the facility are livestock transporters during the sales day process. It was estimated that all of the trucks associated with sale days used the truck wash facility, approximately 25 trucks per sales day.

Congestion was reported as being light during the sale day process, so capacity was deemed adequate for the site. Livestock transports passing along the Calder Highway on non-sale days and from feedlots are other key users of the site.

The usage characteristics of the Wycheproof truck wash site were rated by LRTAV representatives, and results are summarised below (ratings out of 3).

No. Bays	Water pressure & volume	Water quality	Slab slope	Lighting	Access (from highway)	Driver facilities	Overall assessment
2	2	2	3	-	3	-	2

CONCLUSION

The Wycheproof facility meets the demand for truck washing in the region. It's reportedly well used during the 4–6 sale days per year, with all trucks entering using it. Notwithstanding, no congestion issues were reported. The facility is functional, and there are basic facilities (toilets and showers) and is one of the few facilities with both warm/hot water and detergent. It is a low-usage site compared with other sites in Victoria,

Transport providers rated the Wycheproof facility as adequate in all measures. The site ranked highly for slab slope and accessibility from the highway.

WYCHEPROOF

Map 4: Wycheproof truck wash location adjacent to saleyards and railway precinct, south of residential area

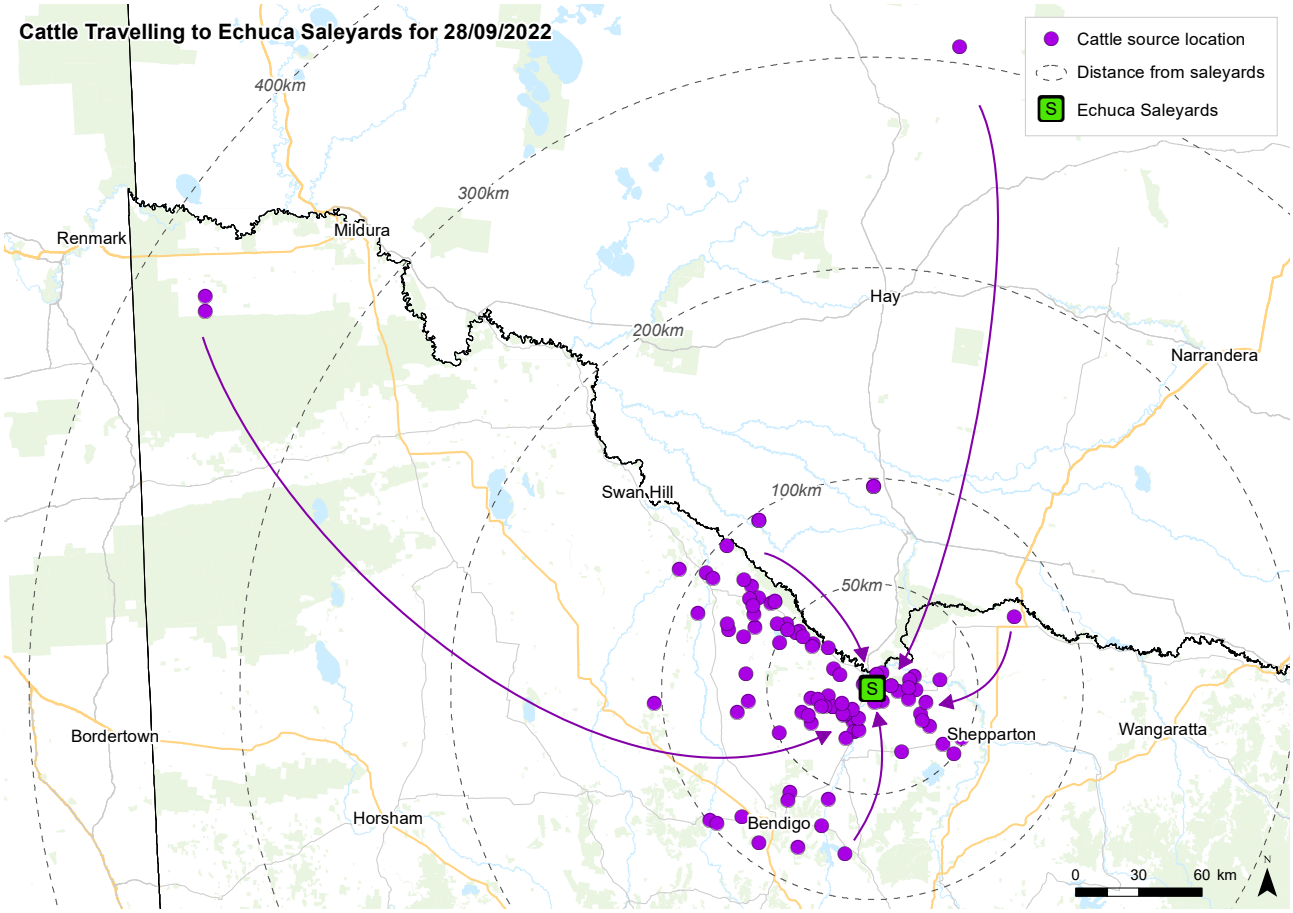
Photo 15: Wycheproof truck wash showing concrete washdown aprons in foreground, lights and fenced wastewater collection area

5. ECHUCA

The Echuca truck wash is a basic facility located at the Echuca and District Livestock Exchange, approximately 8 km south of the town centre, in a rural setting (refer to Map 5).

The saleyards have 32,000 cattle transactions annually. The number of sale days per year is steady; however, total cattle volumes decreased from 37,000 to 32,000 between 2018 and 2022. Echuca is a small-medium-sized throughput saleyard in comparison with other Victorian sites. However, there are a relatively high number of sale days in the calendar.

There are 45 sale days per year, with cattle mostly coming in from a 100 km radius of Echuca for this representative prime cattle sale in September 2022.



There are two open bays without separation for use. The site is almost completely flat and has minimal slab slope (refer Photo 16). The truck wash and entrance/exit are cleaned out daily using a bobcat. The nearest truck wash is Shepparton, ~60km south east.

There is CCTV present at the site, but it only captures the truck wash facility from a distance. The truck wash supplies hoses and nozzles, and the site offers basic facilities (toilets, showers) to drivers. Dam catchment water is used to supply the facility.

Avdata is the payment method for the site.

It was reported that income generated from the truck wash was sufficient to cover maintenance and operation costs. However, it was noted that the revenue wouldn't be sufficient in the event of pump failure.

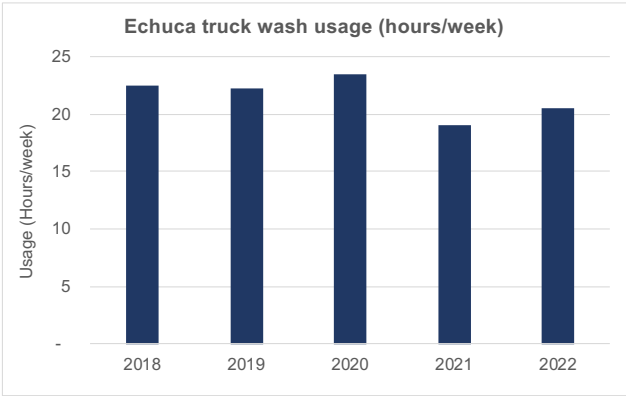
ATTRIBUTE SCAN

Facility attribute	Present
Hoses	√
Nozzles	√
Detergent	X
Disinfectant	X
Warm or hot water	X
Shelter/overhead roof	X
Walled bays	X
Toilets	√
Shower/change room	√
Access attribute	
Extended-period truck parking	X
Open all hours (24/7)	X
Security (CCTV)	X
Larger than B-Double access	X
All heavy vehicle types	X

USAGE

Avdata usage information for the Echuca facility, 2022

Usage factor	Data
Busiest days	Tues-Fri
Busiest months	June-September
Hours/year	1063
Hours/week	20
Average use time	35 mins
No. trucks/year	1881
No. trucks/week	36



The truck wash is accessible between 6.30am and 9.30pm and open to livestock vehicles to B-double size. Between 20 and 50 trucks were reported to use the truck wash each week in the operators' survey and this concurs with avdata provided to the study. Usage has shown a small declining trend of around 10% since 2018. It has a moderate level of use within Victoria's network.

The main user of the facility are livestock vehicles on non-sale days. It is estimated that 40 trucks enter the site on sale days, with only 15% of trucks entering the site using the wash facility.

During busy periods light levels of congestion were reported and not resulting in trucks turning away.

As the facility only accepts livestock vehicles, consultation suggested that upgrading the truck wash to be able to accept grain, fertiliser and other trucks would be beneficial.

The usage characteristics of the Echuca truck wash site were rated by representatives from LRTAV, and the results are summarised below (ratings out of 3).

No. bays	Water Pressure & Volume	Water Quality	Slab slope	Lighting	Access (from highway)	Driver facilities	Overall assessment
2	2	2	1	1	3	2	1

SUMMARY

The Echuca truck wash is functional and adequately sized to accommodate the current volume of demand. It's a moderate use site. Further upgrades would be required if it was to also service grain and fertiliser trucks in the region.

Overall, livestock transporters rated the Echuca site relatively low. The lighting and slab slope were considered the primary issues warranting attention at the facility by users. It appears that raised concrete bays were added to the truck wash floor to compensate for the lack of slab slope.

ECHUCA

Map 5: Echuca truck wash

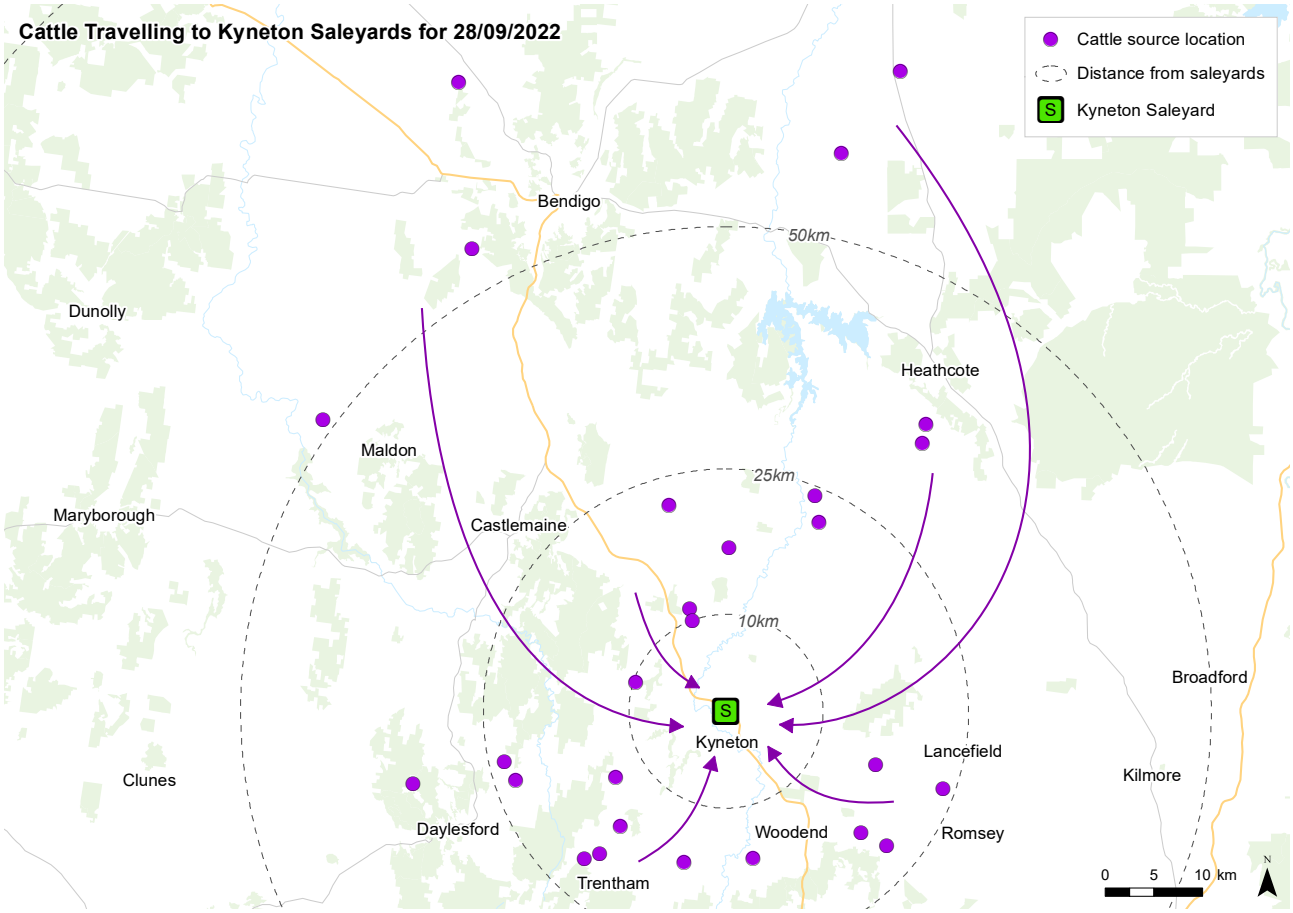
Photo 16: Echuca Truck wash showing poor slab slope and retrofitted raised bays

6. KYNETON

The Kyneton truck wash is located in a light industrial precinct north of the Calder Freeway and 1.5 km north of the town centre. The closest alternative truck wash is located in Bendigo, approximately 85km north.

The Kyneton Saleyard holds frequent but relatively small sales, including 26 sheep and lambs and 37 cattle sale days annually. There is a total of 6,000 sheep transactions and 12,000 cattle transactions. It is a small saleyard relative to others across Victoria, and livestock transactions were reported as decreasing overall.

There is a weekly prime cattle sale drawing cattle from a relatively small area. For the last sale in September 2022, cattle were transported in from as far as Inglewood, north west of Bendigo, with most coming in from within a 25 km radius.



A recent $1.7 million upgrade to the sale yard and truck wash expanded the number of wash bays and constructed an overhead roof on the facility (refer Photos 17 and 18). The facility now has 3 wash bays and is one of the only washes in Victoria with an overhead roof on the truck wash.

The wash supplies hoses and nozzles and has toilet and shower facilities in place.

The facility is open 24/7 and can accommodate all vehicle types, however only up to B-double size. The site accepts sump emptying, and there is no CCTV present.

Water is supplied by rooftop capture primarily, and the facility is also connected to town water. The truck wash is cleaned once or twice per week by hose.

ATTRIBUTE SCAN

Facility attribute	Present
Hoses	√
Nozzles	√
Detergent	X
Disinfectant	X
Warm or hot water	X
Shelter/overhead roof	√
Walled bays	X
Toilets	√
Shower/change room	√
Access attribute	
Extended-period truck parking	X
Open all hours (24/7)	√
Security (CCTV)	X
Larger than B-Double access	X
All heavy vehicle types	√

USAGE

Avdata is the primary payment method, and it was estimated and reported by the operator that the truck wash generates sufficient revenue to cover maintenance and operating costs.

Avdata was not made available for the study for this facility, so no trend data is reported.

Between 50–100 vehicles use the facility each week, which indicates that it's one of the higher usage sites in the Victorian network. Thursdays and Fridays are the busiest days. During the busiest periods, the level of congestion is regarded as a medium however does not result in trucks regularly turning away from the facility.

Livestock vehicles from abattoirs are regarded as the truck wash's main user group, followed by livestock deliveries to the saleyard as part of the sales process. Only livestock trucks are permitted to use the facility.

Approximately 10 vehicles enter the site during sheep sale days and 30 on cattle sale days. During sale days, an estimated 90% of trucks use the truck wash.

The usage characteristics of the Kyneton truck wash site were rated by LRTAV, and results are summarised below (ratings out of 3). [Draft note: Ratings incomplete]

No. bays	Water Pressure & Volume	Water Quality	Slab slope	Lighting	Access (from highway)	Driver facilities	Overall assessment
3	1	2	1	-	3	-	1

CONCLUSION

The Kyneton truck wash is one of the higher usage sites because it is strategically located to capture north bound livestock carriers after deliveries to abattoirs located in western Melbourne.

The Kyneton site was rated as low quality by livestock transporters, despite a recent upgrade. Consultation with livestock carriers indicated that the functionality of the site had not been improved but rather the operational performance in terms of water flow and pressure, had decreased. Key issues with the site related to the inadequate water pressure and pump set up, and insufficient slab slope.

Notwithstanding, the capacity of the site was reported as adequate experiencing only medium congestion.

KYNETON

Map 6: Kyneton truck wash location

Photo 17: Kyneton truck wash showing tanks and control shed

Photo 18: Kyneton truck wash showing roof and neighbouring light industrial land uses

7. GEELONG

The Geelong truck wash is a basic set-up with two unsheltered bays (refer Photo 19 and 20).

The site is located approximately 3 km north west of the Geelong town centre, in an urban setting (refer Map 7). The closest alternative truck wash is Colac, approximately 70km south-west.

The adjacent saleyard ceased operation in 2017, and the City of Greater Geelong's Precinct Structure Plan has designated the site for redevelopment into commercial and residential development. There are ongoing investigations into options for establishing a new livestock exchange hub, including truck wash, in an alternative location.

A 2021 *Livestock Truck Wash Options Analysis* report prepared for the Greater City of Geelong[1] concluded that a relocated facility was not commercially viable without a subsidy from Council. The reliance on a single revenue stream (truck washdown) was deemed too low to attract commercial investment in a new site.

The facility accepts all vehicle types (livestock, grains etc.) up to B-double size. Due to its location in a residential area, the wash facility is only open between 6:30am and 9:30pm. Hoses and nozzles are supplied, but there are no toilet/shower facilities present for drivers.

The water pressure is reported as being adequate. Sump emptying is not accepted at the site. The waste is connected to an urban wastewater treatment plant.

There is no CCTV present on site.

ATTRIBUTE SCAN

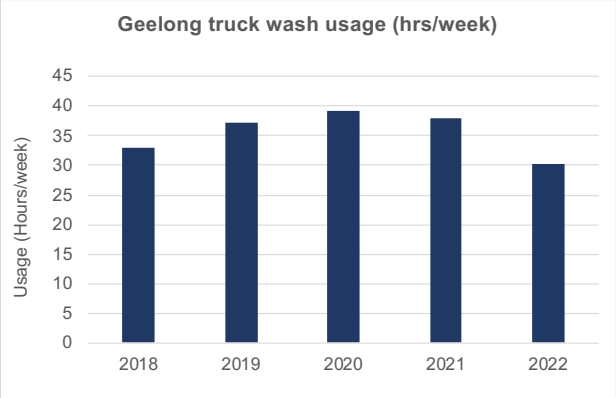
Facility attribute	Present
Hoses	√
Nozzles	√
Detergent	X
Disinfectant	X
Warm or hot water	X
Shelter/overhead roof	X
Walled bays	X
Toilets	X
Shower/change room	X
Access attribute	
Extended-period truck parking	X
Open all hours (24/7)	X
Security (CCTV)	X
Larger than B-Double access	X
All heavy vehicle types	√

[1] KPMG, 2021, Livestock truck wash options analysis and recommendation. City of Greater Geelong, Final Report 7 September 2021

USAGE

Avdata usage information for the Geelong facility, 2022

Usage factor	Data
Busiest days	Thurs
Busiest months	May, June
Hours/year	1574
Hours/week	30
Average use time	52 mins
No. trucks/year	1918
No. trucks/week	37



Avdata is used as the payment method at the facility, and it was reported by the operator that income generated from the wash facility does not cover maintenance and operation costs. The site had consistently operated with a negative surplus for the previous four years.

Information provided by Avdata showed that an average of 37 trucks used the truck wash facility per week in 2022. Usage had been declining since 2020, down from an average of 39 hours per week to 30 in 2022. It has a moderate level of use within Victoria's network.

Congestion during busy periods was reported as being light, with trucks not turning away from the facility as a result of having to wait.

CONCLUSION

Geelong remains a moderate usage facility relative to other sites in Victoria, despite plans for its closure. The basic truck wash structure is functional with minimal attributes. It is without driver amenities such as toilets and showers, for example. Its location is likely to be increasingly less appealing given its restricted operating hours and the requirement to travel through expanding residential areas after leaving the freeway network on the outskirts of Geelong.

Map 7: Geelong truck wash

Photo 19: Geelong truck wash showing bays and perimeter iron walls

Photo 20: Geelong truck wash drains and piping

Appendix 2: Livestock transport assumptions

Modelling assumptions used to translate livestock movements into truck movements.

Table A2-1: Profile of truck movements (% all trips) – Cattle

#	Movement type	B-double	Semi	Rigid
1	Farm to Saleyard	30	40	30
2	Farm to Abattoirs	40	40	20
3	Farm to Farm (including feedlots)	10	40	50
4	Saleyard to Farm	30	40	30
5	Saleyard to Abattoirs (adjusted)	60	25	5

Table A2-2: Profile of truck movements (% all trips) – Sheep

#	Movement type	B-double	Semi	Rigid
1	Farm to Saleyard	20	40	40
2	Farm to Abattoirs	40	40	20
3	Farm to Farm (including feedlots)	20	40	40
4	Saleyard to Farm	40	40	20
5	Saleyard to Abattoirs (adjusted)	60	30	10
1	Farm to Saleyard	20	40	40

Table A2-3: Profile of truck movements (% all trips) – Pigs

#	Movement type	B-double	Semi	Rigid
1	Farm to Abattoirs	40	40	20
2	Farm to Farm (breeding to grow out)	40	40	20

Table A2-4: Trailer/carrier capacity – all livestock categories (no. head)

#	Livestock category	B-double	Semi	Rigid
1	Cattle	70	50	20
2	Sheep	650	450	200
3	Pigs	280	180	50

Notes: capacity head numbers assume an approximate average weight/wool coverage and an average load factor of 80% of capacity per trip was applied in the model

Table A2-5: Wash time (minutes) by livestock trailer type

#	Livestock category	Estimated wash time (minutes)
1	Roadtrain/A-Double	160
2	B-Double	120
3	Semi	80
4	Rigid	30

Notes: wash times are based on a best case scenario where truck had been washed out before loading, a minimal time frame from unloading to washing out, and good facilities i.e. pressure, slope, volume.

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