Final report

Discovery on Australia's livestock transport sector's uptake of eNVDs

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Abstract

Livestock transporters facilitating electronic National Vendor Declarations (eNVDs) is critical to fast-tracking industry transition to digital and paperless NVDs. This project sought input from a variety of livestock transporters throughout Australia to map current NVD processes across different scenarios to better understand potential barriers to uptake of eNVD technology and ways to overcome the barriers. Consultation involved in-depth interviews with large and small operators and the mapping of 25 livestock transport scenarios. Interviews were supported by desktop research and an online survey as well as engagement with rural transport associations and other stakeholders as necessary.

Consultation found paper NVDs are embedded and supported throughout supply chains nation-wide with systems and processes built around paper NVDs. Poor internet coverage, varied staffing throughout the supply chain, complexities of multiple mobs in a load and user experience difficulties are some of the barriers identified to adoption of eNVDs. Ongoing consultation with transporters through a focus group and whole-of-supply-chain engagement will be critical to understanding transporters as users and overcoming some of the barriers to adoption. Thorough in-field testing is essential to fully grasp the challenges being experienced and ensure the technology can perform consistently across a range of scenarios.

The project will benefit industry by addressing gaps in knowledge of transport scenario processes as well as gaps in formal consultation with users and data from transporters as key links in the red meat supply chain.

Executive summary

Livestock transporters play a vital role in the red meat supply chain and use National Vendor Declarations (NVDs) multiple times a day. This project sought to build knowledge of current NVDs processes involved in complex livestock transport journeys across the country and how digital/electronic NVDs (eNVDs) could potentially be used in such situations. The project aimed to understand transporters' experiences with eNVDs to better understand potential barriers to adoption and develop options and recommendations to overcome the barriers. A high-level assessment of current consignment management software being used and operational challenges was required in the project.

A national consultation process was requested including semi-structured, in-depth interviews with more than six transporter businesses of varying size and geographic location. Eleven transporter businesses from across Australia were interviewed, as well as a spelling yard operator, to validate perspectives raised from transporter interviews. Twenty-five livestock transport scenarios were mapped from information received during the interviews, including spelling yards, cross loading, dipping stations and saleyards. Interviews were supported by an online survey, enabling those who wished to have their say to take part. One hundred and four survey responses were received, a higher than anticipated response, providing further data and considered input. Consultation also included engagement with the Australian Livestock and Rural Transporter Association (ALRTA) and the six state chapter associations to inform them of the project, seek their assistance in promoting the survey and provide an opportunity for input if desired.

The project found the paper NVD process is well established and strongly supported nation-wide. In practice, the process of handing over a piece of paper is often faster and easier for transporters with systems developed around paper NVDs and paper overcoming issues of poor internet coverage and phone service, varied staffing at sites and requests from authorities for paper copies for proof of ownership. The project also found users have had ongoing challenges using the eNVD app, from time outs to incorrect destinations causing hours of delay at unloading points, with issues still experienced within the last six months since improvements were made to the technology.

Consultation indicated there is not a strong demand for eNVDs from transporters' clients, with some suggesting they would work out a way to facilitate the technology if the demand was there, receival processes supported eNVDs and the technology worked consistently. Results from consultation indicated many transporters strongly disagree with having to create myMLA logins for each driver and would prefer to either have the NVD shared with them and stay out of the transaction component between livestock seller and purchaser. Whilst most smaller transport companies interviewed were still using diaries and pens to manage consignments, larger companies were using or moving to consignment management software. Transporters indicated they use technology where there is a benefit and it is easy to use – with weather apps, mapping apps and social media apps the most popular technology identified.

Fifteen recommendations were made, including continuing with ongoing consultation across the supply chain and thorough testing of the technology in the field to enable understanding and continued user feedback to help overcome the barriers to eNVD adoption. Improvements to the user interface, communication suggestions and consideration of a transporter-specific eNVD app are included in the recommendations to help lift adoption.

AgSTAR Projects would like to acknowledge the Australian livestock transport sector for their engagement throughout the project including respondents of the survey, the participants who were interviewed, and the state and territory livestock transporter associations for providing feedback and promoting the survey. AgSTAR would also like to thank the Integrity Systems Company team for their participation and sharing of information.

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1. Background

1.1 The knowledge gap to address

Integrity Systems Company (ISC) is supporting the Australian red meat industry to fast track its transition from paper NVDs to digital/electronic (eNVD's).

ISC understands the livestock transport industry is varied and complex. Livestock transporters play a vital role in the red meat supply chain and use NVDs multiple times a day. This project sought to build knowledge of current NVDs processes involved in complex livestock transport journeys across the country. The project aimed to address a gap in understanding livestock transporters' perspectives on the complexities of different livestock movement paths throughout Australia and how digital/electronic eNVDs could potentially be used in such situations.

1.2 The main question being asked

This project sought to identify possible livestock journey types, transporter operational considerations and the requirements of the eNVD platform to support its effective use in the livestock transport sector. Specifically, this project investigated:

- The scale and complexity of these livestock journeys and the implications for paperless digital consignments;
- The current systems and processes for transfer of paper NVDs;
- Perceptions, attitudes, barriers and anecdotal limitations of the current digital solution; and
- How paperless digital consignments can occur in the transport sector, with a focus on understanding and overcoming the challenges associated with complex livestock journeys.

1.3 Target audience

Livestock transporters were the main target audience for the project as a key link in the supply chain. This project sought to provide data and insights through a formal consultation process with a diverse range of livestock transporters to map a variety of transport scenarios from across Australia. Input was needed from transporters to better understand the intricacies of complex journeys and to better understand their perspectives on the technology.

Ensuring transporters can confidently and seamlessly execute livestock movements in an electronic and paperless world, while still meeting legislative requirements, has been identified as an opportunity to fast-track industry transition to digital consignments.

1.4 What the results will be used for

The report will be used by ISC to guide future planning of the eNVD program. Recommendations from the report will be considered and prioritised in terms of cost, timeframes, ease of implementation and scale of likely increase in eNVD uptake.

2. Objectives

The following objectives were required in the project:

Work with industry stakeholders and transport operators to carry out a scoping exercise of the different transport journey scenarios that exist and:

1. Conduct interviews with at least 10 transporter businesses (including large- and small-scale operators) to define current attitudes, resistance and barriers to eNVD adoption and ways to increase use of the app in the transport sector.

   This objective was successfully met as interviews were conducted with 11 transporter businesses of varying sizes from across Australia and one spelling yard operator. Attitudes, resistance and barriers to eNVD adoption were captured and ways to increase use of the app in the transport sector identified.

2. Document different transport journey scenarios and identify the anecdotal limitations of the current digital solution, for example (but not limited to) the need to spell animals on long trips.

   This objective was successfully achieved with 25 livestock transport journey scenarios documented and limitations of the of the eNVDs identified. Limitations included the technology working consistently without long periods of internet coverage in the case of remote stock camps, transferring across multiple parties without face-to-face contact at spelling yards, accommodating a number of lines (mobs) of livestock on one load, transferring successfully across a number of parties with changing trucks or dipping yards and transferring livestock into and out of saleyards.

3. Describe how consignments are currently being recorded on paper NVDs within each scenario and assess the eNVD platform's ability to accommodate this.

   This objective was successfully met with interviews explaining how consignments are currently being recorded on paper NVDs across journey types as well as how paper is transferred and used in different systems. A gap analysis of the eNVD platform's ability to accommodate the scenarios highlighted areas to focus on.

4. Identify and provide a high-level assessment of the types of software transporter companies are using for consignment management and operational challenges identified.

   This objective was met with the high-level assessment of software that transport companies use included the MyTrucking App and two bespoke systems. Operational challenges identified were being simple to use and working in conjunction with other apps for different commodities a transporter may be involved with.

5. Provide a final report that includes recommendations on specific actions ISC may take to overcome the barriers to eNVD adoption in the transport industry.

   This objective was achieved with the final report written, including 15 recommendations to help overcome barriers to eNVD adoption in the transport industry.

An additional objective was added by AgSTAR Projects:

6. Recommendations for extension and communication messages and resources on the eNVD for the transport sector.

   This objective was achieved with recommendation number 13 outlining suggested communication messages to support the release of the public version of the report.

3. Methodology

3.1 Background research

3.1.1 Project inception meeting

AgSTAR team members met with ISC project team members for the inception meeting. This included:

- A demonstration of the eNVD App.
- A demonstration of the Digital eNVD Consignment PowerBI Dashboard.
- Confirmation on how participant feedback would be used and who the final decision maker was.
- Discussion on findings and reports from previous consultation with the transport sector on the eNVD platform and other parts of the supply chain.
- Confirmation on the criteria for interview participant selection.

3.1.2 Meeting with AgriGrowers Logistics

AgSTAR Projects met with AgriGrowers Logistics to understand outcomes and insights from previous research and consultation on eNVDs in the Australian livestock transport sector.

3.1.3 Desktop research

The desktop research included a scan of relevant documents on barriers to technology uptake in Australian agriculture, previous eNVD for transporters reports and state and national requirements for livestock movement documentation which were reviewed in compiling this report.

3.2 Consultation approach

Stakeholder consultation for the project was undertaken in line within the International Association of Public Participation (IAP2) core values. Under this approach it was important participants of the consultation understood:

- What the scope of the consultation was
- How their input would be used – i.e. That their input would be captured in a report used to guide planning and developments of the eNVD technology.
- Their level of influence on the decision i.e. That their input would be considered however the ultimate the decision maker was ISC.

3.2.1 Communication plan

A project communication plan was developed to ensure consistent messaging across the various channels including the information provided to the interview subjects, consultation with the national and state and territory livestock and rural transport associations, social media and industry newsletter content.

3.2.2 Interviews with transport operators

Semi-structured, in-depth interviews were conducted with 11 transport operators from across Australia. Transport operators were selected based on:

- The complexity of journey scenarios they undertook
- Their geographic spread to provide representation across states and territories
- Recommendation by other stakeholders
- Variation in the size and species transported
- Additional companies to those previously engaged through other projects

Transport operators were contacted in advance of the interview and provided with background information on the project as well as information on how their input would be used. Interviews were recorded for accuracy, with permission sought.

Participants were provided with a written summary of the interview and given the opportunity to provide feedback or suggest any corrections to ensure they were comfortable with the accuracy of the recording and had a feeling of control over their input.

Interview questions were divided into themes including:

a) Background of company and role of participant
b) Mapping complex livestock transport scenarios
    - Understanding the current process for NVDs in these scenarios
    - Understanding barriers to eNVDs in such scenarios
c) Understanding participant experience with NVDs
d) Consignment software used in the transport operations
e) Designing participant's ideal digital solution for NVDs
f) Any other comments

The in-depth interviews enabled a broad section of transporters from across the country representing a diverse range of journey scenarios to be covered. It can be concluded this method of consultation was successful.

3.2.3 Informal interviews with other stakeholders

Whilst not a requirement of the project, additional, informal interviews were conducted with other stakeholders to gather necessary information to support the research. Interviews were conducted with:

- ISC staff members from the technical support team and adoption team.
- Spelling yard operators – Inconsistencies had been found in interview accounts on spelling yard NVD processes.
- A producer – A rangeland goat producer based in Western NSW – originally contacted to seek transport operator information, the rangeland goat producer wanted to share their experience with electronic NVDs.

The additional informal interviews shed light and added new information to content gathered through the rest of the consultation. This method of consultation can be considered successful.

3.2.4 Survey

Given the limited amount of interviews to be conducted through the project, an online survey using Survey Monkey was developed to provide an opportunity for transporters who wished to be involved to share their thoughts on eNVDs. No incentive was offered for participating.

Social media tiles and supporting newsletter content were developed and shared with transport associations to assist with survey promotion and build awareness of the project.

One hundred and four survey responses were received. This result was higher than expected, particularly as the target audience is largely mobile rather than desk-based and frequently out of phone reception.

It is acknowledged that there may be some voluntary response bias in the survey responses. Voluntary response bias can happen when individuals choose to respond to a survey based on a strong feeling about the subject (FullSession, 2024). However, when analysed in conjunction with responses received across the consultation, the results were consistent and provided valuable feedback on the perceptions and attitudes toward eNVDs, the challenges experienced and barriers associated with uptake of eNVDs by transporters.

It can be concluded that this method of consultation was successful. The number of responses and depth of feedback received was valuable, raising additional points and supporting findings from interviews. It also enabled more transport companies to be involved in the research, broadening the sample size and reducing the likelihood of dissent at not being consulted.

3.2.5 Questions to livestock and rural transport associations

The consultation was extended to the six state chapters of livestock and rural transport associations as well as the national body to:

- Provide equal opportunity for involvement
- Encourage promotion of the survey throughout each state chapter's communication channels
- Capture any differences in sentiment between the states

For efficiency, rather than separate phone calls and interviews to each association, an email including project background, newsletter content, social media tiles and questions were sent to state and national secretariats.

It can be concluded this method of consultation was partially successful. Giving the state chapters and national body the opportunity to be involved enables them to feel informed about the research and included, reducing the likelihood of dissent if finding out after. The sharing of information in newsletters and on social media was successful, efficient and likely contributed to the high number of survey responses. The lower number of responses received from associations meant the approach of asking for an email response to questions was less successful.

4. Results

4.1 The new product adoption process

Consumers go through five stages in the process of adopting a new product (Albrecht, Green & Hoffman 2023):

1. Product awareness
2. Product interest
3. Product evaluation
4. Product trial
5. Product adoption

Consultation found users were largely aware of eNVD. The product had been trialled by most of the consultation participants. Evaluation of the product came down to the users experience with the product and demand from clients. In field testing, ongoing consultation with transporters and trials can build knowledge on whether specific issues being experienced are user and knowledge issues or technical issues which can help guide training or amendments to the technology.

4.2 Adoption of technology in Australian agriculture

Given eNVD is fundamentally a technology for Australian agriculture, it is important to understand the broader themes and trends in the adoption of technology generally in Australian agriculture. This helps to identify existing limitations and barriers as well as potential solutions across the sector.

Desktop research for this project found that while there is a degree of innovation and adoption in Australian agriculture, the state of technological advancement remains somewhat immature and ad hoc (Baker et al. 2017). People, rather than technology, are at the heart of digital agriculture adoption, but technology providers tend to focus on promoting the functions and applications of the technology (Leonard 2022). The ongoing failure to unlock the value proposition of digital agriculture is considered to be due to digital solutions being offered at a task level, rather than a process level, and failure to align digital solutions with human influences on adoption (Leonard 2022).

This report considers the people aspects of eNVD adoption and explores social barriers, personal barriers and the value proposition offered to livestock transporters in using the eNVD. Further consultation to understand business and enterprise processes such as saleyards and processors, as well as thorough field testing across the supply chain is recommended to ensure the solution is aligned with industry needs.

Users adopt new technology when there is a clear value proposition, it is easy to use and provides a cost benefit (Hansen et al. 2023). Technology developers need to work with end users using a co-design process (Ayre et al. 2019; Stitzlein et al. 2020). Working directly with users helps to capitalise on skills and knowledge, break down the digital divide and remove barriers to communicating the value proposition (Leonard 2022 and Lamb 2017).

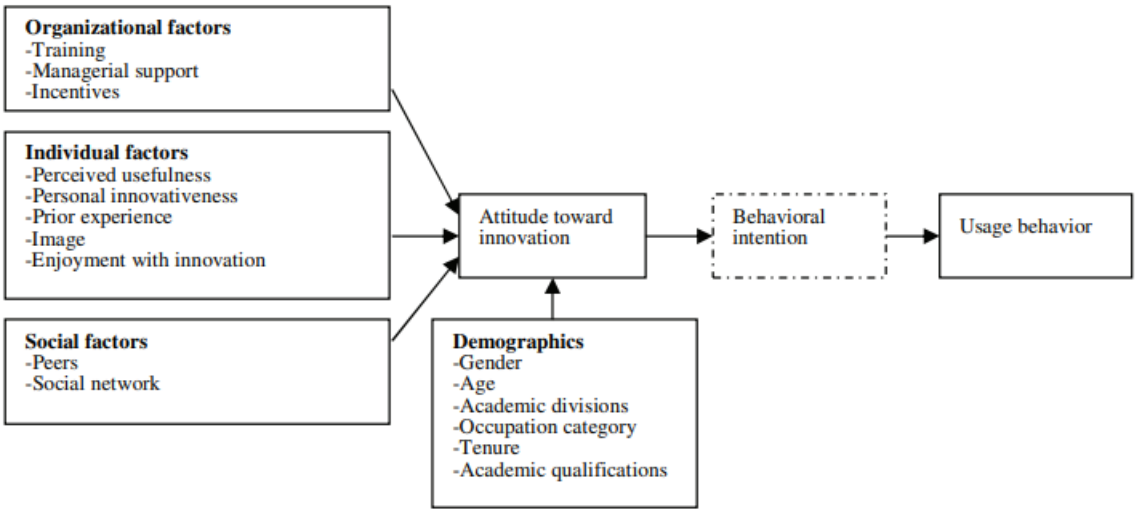
In the case of eNVD adoption by transporters, lines of direct communication and ongoing work with end users to understand application of the technology in the field may help to better understand the barriers faced and solutions to overcome the barriers.

In livestock production, rural women use most components of technology three times more than men (Hay and Pearce, 2014). The survey and interviews found often administration in businesses was managed by a rural woman, which is important to consider when developing communication channels, training materials and considering the various staff and users of the eNVD and its outputs throughout the transporter operations. Rural women were also identified as assisting others to use technology in the surveys. User experience is a key element in technology adoption. If users do not have a good experience with the technology, they are less likely to continue using it (Jones 2022). Findings from the transporter survey and interviews found many transporters had a negative experience when using the app and had not continued to use or even discouraged others from using. This is explored further in section 5.8.

Research on individual employees in Australian organisations indicates social influences and training in the technology are also strong influences in technology adoption (Talukder 2012), where if everyone else is using the technology people do not want to be left behind. Whilst further research into factors affecting technological uptake on an organisational level may be undertaken, the factors affecting individual employees may be useful in considering training materials and processes as well as attitudes and behaviours toward eNVD.

Fig. 2 indicates other factors affecting the attitude, behaviour and usage of technological innovation by individual employees in Australia.

Figure 2. Research model of innovation adoption for individual employees in Australia (Talukder 2012)



4.3 The Australian livestock transport industry

4.3.1 Industry characteristics

To understand livestock transporter adoption it is important to understand the industry. Together the state and national transport associations represent more than 850 transport businesses across the country (Australian Livestock and Rural Transporters Association, 2024). The project interviews found the livestock transport industry is fast-paced and time dependent.

Journey scheduling is complex, considering:

- Available staff and vehicles

- Delivery deadlines of feedlots, processors (abattoirs) and saleyards
- Not exceeding driver hours
- Time off feed and water for livestock
- Other pickups along the way to one destination
- Other jobs for the day

Transporters are frequently loading and travelling in locations without phone and internet reception. Often NVDs are completed at the time of loading due to the unknown number of livestock or carrier details or established practices.

Several transporters interviewed mentioned they do the same function – i.e. transport livestock every day, however the specifics of each day in terms of where they are going, who collecting from, where delivering to, will vary. Others will have regular loads, such as those transporting from feedlot to processors.

Supporting comments:

"Every day is different." Interview comment

"Nothing is regular." Interview comment

Loading and unloading of livestock at saleyards is busy, with thousands of livestock moving in and out of destinations and into pens or onto trucks to go to new locations. Transporters may load out of spelling yards in the early hours of the morning without coming into contact with spelling yard operators.

Whilst from a safety perspective it is not recommended to load cattle alone, anecdotal evidence suggests both sheep and cattle are frequently loaded and unloaded alone.

Drivers have to navigate directions, access, poor road infrastructure, varying quality yard and loading ramp infrastructure and inclement weather. Time to wash out trucks and manage effluent add to the considerations for a driver's day.

4.3.2 Business administration and staffing

Themes of staff shortages and a reliance on casual drivers and subcontractors were noted by transporters throughout the consultation. For small to medium transport companies, administration is often managed by one person, who is often a woman. This is important when considering the roll out of training or the channels of communication regarding efficiency benefits; it is important not to just target drivers but consider all users and touchpoints within transporter businesses.

Supporting comments:

"*Driver shortage and availability is a major issue in the industry*." – Transport association comment

"We have a lot of subcontractors working for us at the moment." – Interview comment

"We have one truck we can't get a driver for," – Interview comment

4.3.3 Supply chain

The supply chain is reliant on each link working together for the system to operate effectively. The handling of livestock and handling of documentation are key components of the inter-reliance, with systems and processes needing to support and not hinder or delay each stage. For instance:

- Transporters schedule arrivals around curfews of saleyards and abattoirs.
- Livestock collections are coordinated to meet the needs of producers as well as the transporter's schedules.
- Transporters may have multiple pick-ups and deliveries in a single day.
- Paper documentation systems are well established throughout the chain.

Relationships are essential and transporters work to meet client needs. Several transporters mentioned they respond to client needs – if producers were requesting electronic NVD's they would work out a way to facilitate them. Given the inter-reliance it is necessary to consider the whole supply chain together – and look for ways to bring players together to understand each other's considerations in adopting the technology.

4.3.4 Livestock agents

From the interviews and understanding of the industry, livestock agents are often involved in contacting the transporter and booking in the consignment on the client's behalf. This makes them a key stakeholder in the transaction and transfer of information required for the NVD including destination name, address and Property Identification Code (PIC).

For producers with limited technology ownership, knowledge and skills, livestock agents have been identified as a critical stakeholder in such transactions.

Livestock agents are also key influencers for all transactions arriving at and leaving saleyards. Agents have contact with transporters, producers, feedlots, processors – they attend sales and have touchpoints at each stage of the supply chain.

Understanding livestock agents' businesses, influences on business adoptions and the role of administrators within agencies may prove useful further consultation.

4.3.5 Differentiation between platforms

It is worthwhile noting the variety of options for transporters to add information to an NVD. These options are outlined below:

a) **NVD printed books (paper)**- the transporter fills out the transport section in the book and takes two copies.
b) **eNVD web-based printed** – the vendor prints the eNVD and provides it to the transporter, who then fills out the via transport section and takes two copies.
c) **eNVD web-based or mobile app** – the transporter receives the eNVD via their email which is registered with myMLA and fills in the transport section via the website or app.
d) **eNVD mobile app (QR scan)** – using the eNVD app, the transporter scans the vendor's eNVD QR code and completes the transport section via their own app.
e) **eNVD mobile app (vendor submission)** – the transporter completes and signs the transport section on the vendors eNVD app and the vendor sends a copy to the transporter via email, URL link or SMS.

It should be noted that while the term "eNVD" encompasses both the eNVD web-based platform and the eNVD mobile app – consultation found confusion between the two. Particularly in interviews, some respondents would automatically speak about the app when discussing eNVD.

During the consultation it was found that 'printed web eNVDs' are also referred to as 'paper' NVDs by some of the transporters. Some transporters also referred to web eNVDs as eDECs.

The various options transporters need to facilitate may mean transporters need to be trained across each of them.

For ISC consideration:

To reduce confusion between the different processes outlined above, it is recommended that ISC review its eNVD communication strategy to clearly differentiate between eNVD web and eNVD mobile app. By explicitly differentiating between the two platforms, users (particularly transporters) may better understand how to interact with each system, issues with each platform can be specified and resources dedicated to the correct platform.

4.4 Livestock transport scenarios

In-depth, semi-structured interviews were carried out with 11 transport companies and one spelling yard operator, resulting in 25 scenarios being mapped. Details of the scenarios have been provided to ISC. Three sample scenario flow charts are provided in Appendix 9.3.

It is important to note that the transport scenarios captured via interviews are specific scenarios mentioned by a representative from a company and that the steps involved in each individual consignment may vary from day-to-day.

4.5 Anecdotal limitations of eNVDs to accommodate the scenarios

In theory, many of the scenarios presented could be accommodated by the app and website. Several transporters mentioned electronic NVD is a great idea and concept in theory. However, in practice, when used in the field, transporters are reporting limitations in meeting their requirements in both complex and simple journeys.

Supporting comments:

"It's great in theory but clunky in practice." - Interview comment

"The concept is fantastic but in practice is poor." - Survey comment

From the interviews the following limitations are presented in Table 1. Some are explored in further detail in Section 5 – Barriers to eNVD adoption.

Table 1: Anecdotal limitations of eNVD's to accommodate livestock transport scenarios

Limitation	Further detail
Saleyards	Often livestock are transported out of saleyards before the sale is finished and the truck may proceed the paperwork – further consultation into saleyard processes and testing of technology is needed. Paper NVDs often used to write pen numbers of livestock on. Transferring livestock into saleyards if unmanned – paper systems established.
Transferring multiple lines of livestock on one truck to the receiver	Trucks frequently transport multiple lines (mobs) on one truck – complexities in transferring details from each line to receiver.

Dipping stations	Potential complexities with dipping locations if cattle not cleared – time delays to original consignment and change of transporters – may be days between arrival at dipping point and assessment, dipping if needed, time for chemical to take effect, clearance and re-loading usually with another transporter.
Remote stock camps	Livestock often loaded from remote stock camps which may be days without internet coverage – technology and process needs to consider.
Train journeys	Train journeys involve a high volume of animals being loaded from a number of trucks with different lines of cattle onto the train, spelled and then re-loaded into company mobs. Currently drivers don't add details to NVD – eNVD may create a new task for drivers in needing to add their details manually. Transferring a large number of NVDs through different parties needs testing.
Spelling yards	Spelling yards have high volumes of livestock arriving on trucks with up to 10 different lines on one truck. Often the next truck will load without face-to-face contact with previous drivers or spelling yard operators. Spelling yards interviewed identified the importance of keeping copies of the NVDs for traceability purposes.
Authorities requiring hard copies	Authorities including Stock Squad, Highway Patrol and border crossing authorities are still requesting hard copies of documentation to photocopy.
Older farmers not using	Older farmers without access to internet or mobile phones are unable to use the technology.

4.6 Response from engagement with transport associations

Responses received from transport associations raised issues in line with issues raised through interviews and the survey, including:

- Difficulties using the app with limited phone service and internet coverage
- Preference for the paper system
- Concerns with being pulled up by authorities when out of service
- It is up to the clients to take up the system/transporters are not part of the livestock purchase transaction
- Multiple lines of animals on one truck can make it difficult to efficiently scan from one phone to another
- Spending time overcoming problems with the system is not conducive to good fatigue management and overall job satisfaction of drivers noting that driver shortage and availability is a major issue in the industry.
- Constant 'glitches' with the system to date have resulted in a loss of confidence in the system ever being effective.

An additional concern was raised that hadn't been mentioned elsewhere throughout the consultation:

- Drivers forgetting to transfer them to the office – paper is much easier at the moment.

With drivers having to log in and have their own account, they would need to share the eNVD with the office – an additional step and "creating more work for them."

One transport association mentioned they have created their own traceability documentation for members to meet the traceability documentation required under biosecurity laws. They distribute printed books of consignment notes to member transporters who order them. The notes include conditions of carriage to give transporters "more legal protection."

Supporting comment:

"*We have obligations for traceability documentation through various biosecurity laws and this documentation can be made available to police while livestock are in transit*."

4.7 Consignment management software

Four of the eleven companies interviewed have used or are using consignment management software, including the MyTrucking App and two bespoke systems. Five of the 105 survey respondents indicated they used consignment management software, including two who mentioned MyTrucking.

One interview respondent mentioned they had used MyTrucking but got rid of it because it was too confusing and didn't work in with another app they were using for grain transport.

MyTrucking is a cloud-based, online Transport Management System developed in New Zealand (mytrucking.com 2024). It allows the input of job details into an app and automatically sort loads by vehicle, origin or destination, assisting with job scheduling and allocation.

Consignment management software that can integrate with the NVD system may be advantageous for transporters, however if the process for transport companies to integrate is expensive, arduous and time consuming it may limit uptake. Critical to the buy in from transporters in projects for integration will be transporter client demand for eNVDs.

Further investigation may be useful to understand the most popular consignment management software throughout Australian livestock transport companies. Discussions with developers of popular consignment management software companies to understand the potential to incorporate eNVD components into the software e.g. My Trucking App may be advantageous for both parties rather than requiring transport companies to invest in projects if demand is limited.

The current trials being implemented with transport operators and larger pastoral companies will provide useful insights into how integrations may work and what the transporter experience was like, as well as what value and benefit the change has provided to transporters. If positive, this could be used in case studies.

4.8 Participants' ideal digital solution

Interview subjects were asked what they saw as the ideal digital solution from a livestock transporter perspective. Whilst not all the ideas are necessarily recommended there may be value in considering their merit in future planning and consultation. Themes of a simple-to-use system incorporating a planning component were raised. One participant suggested an emergency notification system in the event the driver was hurt loading livestock.

Supporting comments:

Planning component

- *"There would be a diary component of it – book a load into the diary – when NVD comes through, links to the booking. Then when DPI rings – I can check the diary in app and say yes – here is the NVD I received, and this is the number. That would be ideal."* – Interview comments
- "*You could make it a tool for planning – the agent does the consigning and sends that through. We could set a four-hour alert on jobs and get rid of the book. Otherwise its pretty easy to put a piece of paper on parcel shelf and carry along,"* – Interview comments
- "*Possibly some pre-fill information for carriers so that producers could nominate a carrier from a list/database and the NVD to be sent to our office*," – Survey comment

Simple solution without transporter involvement

- *"Needs to leave us out of it. Stop overcomplicating it – let something loose on the market that wasn't ready."* – Interview comment
- *"Digital is not there at the moment yet. Need to get each end right – there are too many variables – names and trading names and addresses. We're ok in the middle – but the sender and the receiver. Digital has to be practical – well tested. Scanning at abattoirs for example – great idea in theory, a lot of issues in practice."* – Interview comment
- *Make the app simpler, similar to the CBH app for grain consignment* – Interview comment
- *Must be easy to access on phone or tablet without numerous passwords or pin numbers* – Survey comment
- *"Look at speed and simplicity,"* – Interview comment

Given the increasingly electronic nature of livestock management within Australia and the installation of scanners at facilities and electronic identification, thought may be given to whether there would be any efficiency gains or possibility of linking the NVD with NLIS movements to reduce duplication of administration tasks.

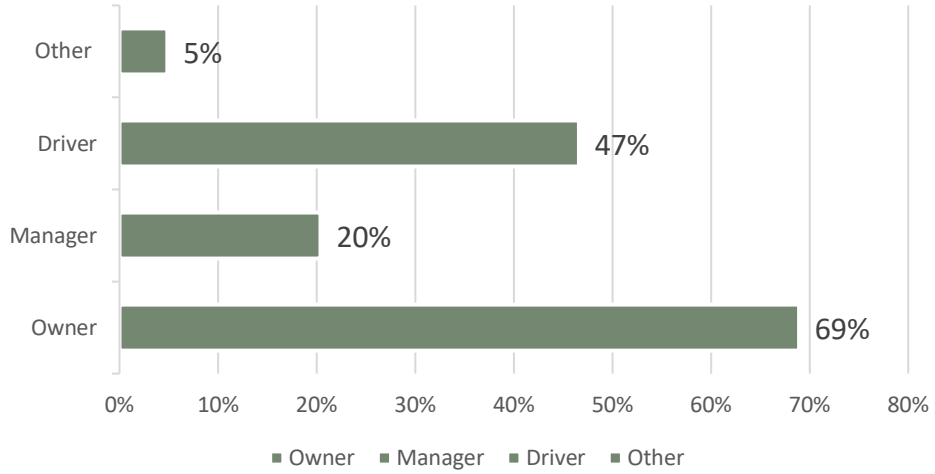
4.9 Survey results

There was a good response from livestock transporters to the survey, with 104 respondents and 56 of those respondents completing the survey in its entirety. Every state and territory was covered by the respondents, with many operating over a number of states and Australia wide (as seen in Fig. 19)

4.9.1 Demographics

Of the respondents, nearly half were drivers, approximately 70 percent were owners and 20 percent indicated that they were managers. The rest of the respondents were administration staff, an agent and an Ag School teacher (as seen in Fig.12). Respondents were able to select more than one response, with some respondents indicating they had multiple roles e.g. owner and manager or owner and driver. There was a good distribution of ages, from 25 through to over 65. Respondents were asked their own age, as well as the average age of drivers/employees within their business. Fig. 18 shows that the age of respondent to the survey doesn't vary a lot from the age of employees within the business that the respondent works in.

Figure 12. Survey respondent's role in the livestock transport industry



When asked how they would categorise the livestock transport business/operation that they are involved in, 56 percent indicated that they were an owner operator and 28 percent were a transport company. As shown in Fig. 14, the rest of the respondents were in-house transporters, farmers who transport their own stock and subcontractors.

There is a considerable level of experience, with 84 percent of respondents indicating that their organisation has been operating for over ten years (Fig. 17). The number of employees varied between respondents, with nearly half of the respondents working in an organisation with two to five employees and 32 percent with only one employee (Fig.15), an indication that many of the owner operators had staff working for them. This is backed up by Fig. 16, which shows the number of trucks in each organisation's fleet with 55 percent having two to five trucks. Respondents also indicated the type of stock they transport (Fig.13), with 86 percent carting cattle, 84 percent carting sheep and 38 percent of respondents carting goats.

Figure 13. Livestock carted by respondents

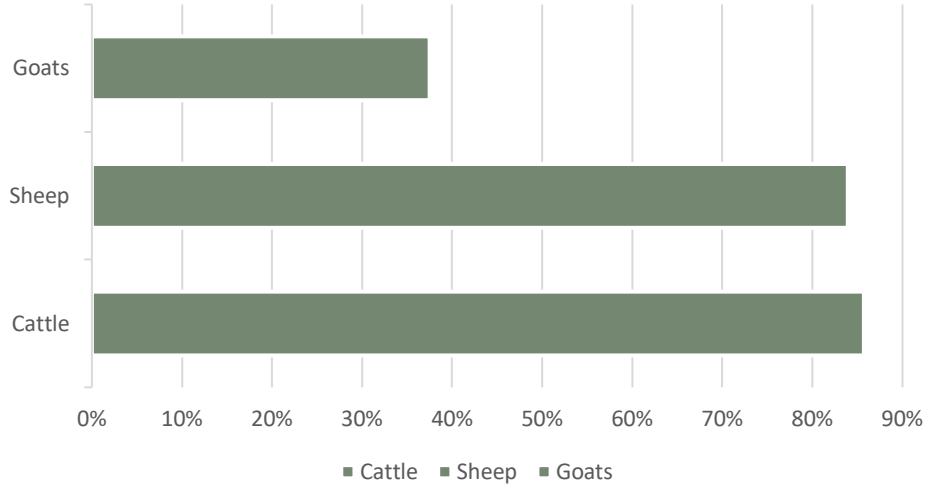


Figure 14. Survey respondents' business category.

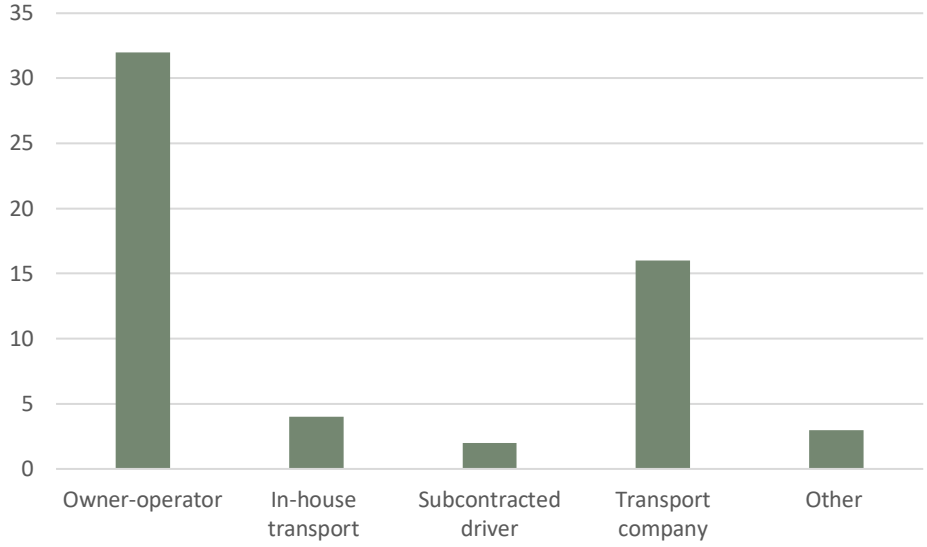


Figure 15. Number of employees in the operation in which the respondent works.

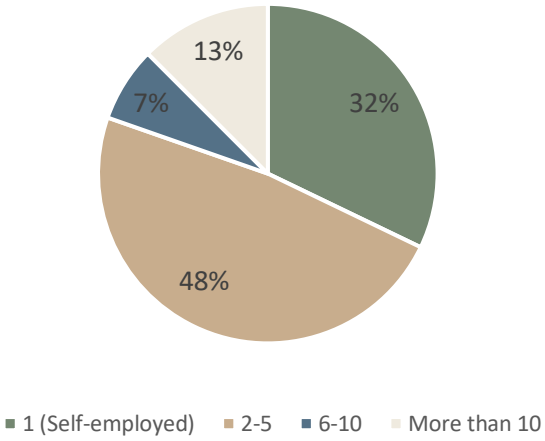


Figure 16. The number of trucks in the company's fleet

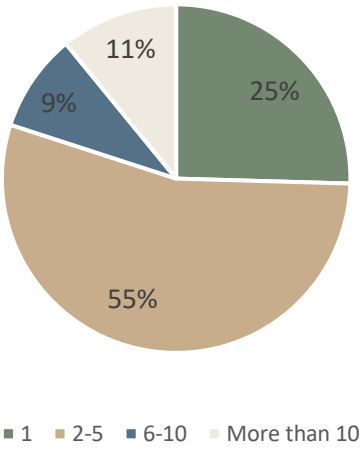


Figure 17. Length of time the company has been in business

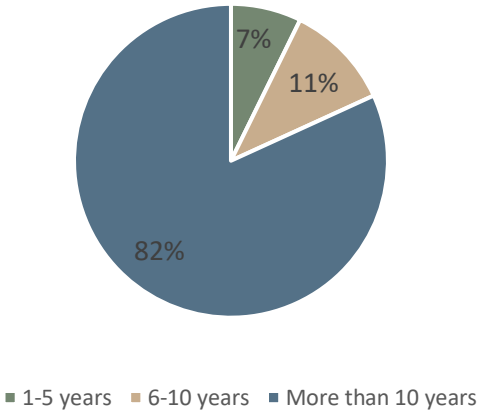


Figure 18. The age of respondents and the average age or employees in the respondent's organisation

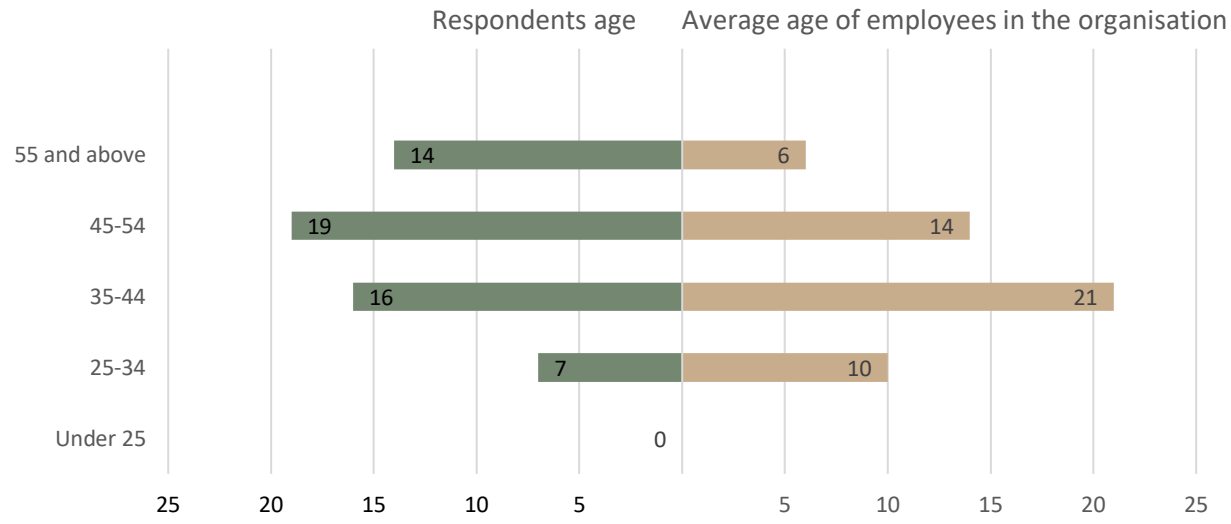
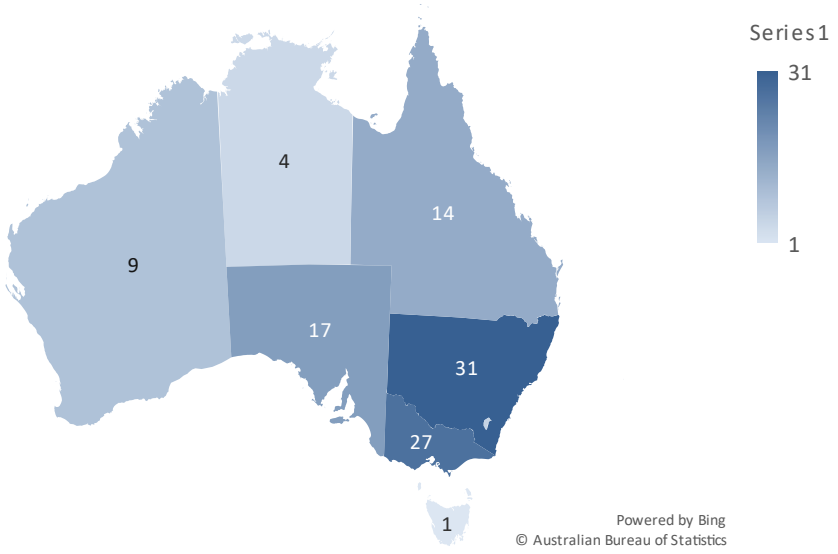


Figure 19. The states and territories that are covered by the survey



4.9.2 Experience using eNVD

Respondents were asked if they had used the eNVD app or eNVD web (Fig. 20). One third of the respondents had used the eNVD app and just under half had used the web-based system. One third had not used either. When asked why they are not using eNVDs (Fig. 21), 26 percent said that their internet was not good enough, 24 percent indicated that they have not been asked to by the producer and 9, 15 and 25 percent said that it was hard to set up, too hard to use or they tried to use it and had problems, respectively. Seventy-six percent said that the paper form was better and 24 percent of respondents indicated "other", with some of the reasons being:

- Receivers (yards, feedlots or processors) needing paper copies.
- Farmers not using eNVD due to choice or ability.
- Phone service.

There was a fault in the survey that allowed all respondents to answer this question rather than just those who had not used eNVD. The themes were similar between those who had and had not used eNVD.

Figure 20. Survey respondents experience with eNVD

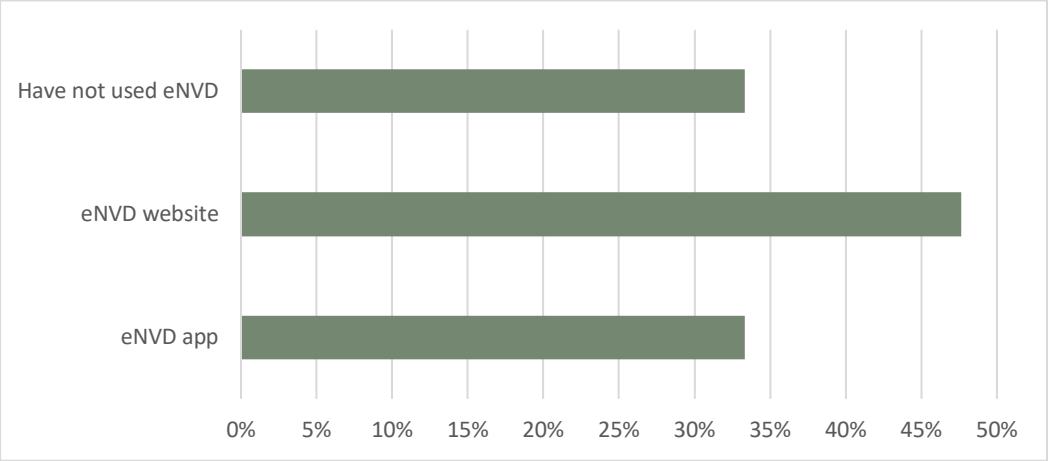
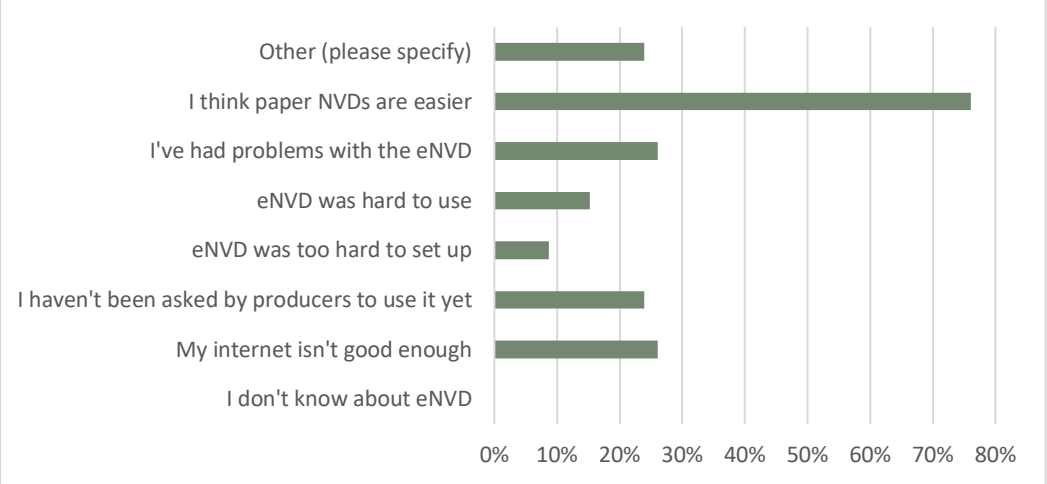
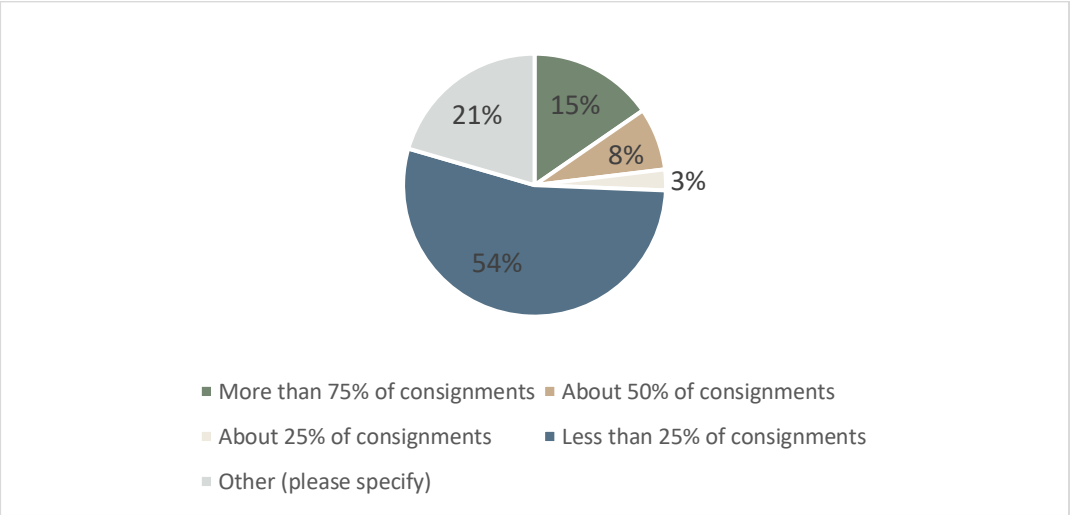


Figure 21. Reasons why survey respondents have not used eNVD



Respondents who had used eNVD were asked how often they used it. Fifty-four percent said less than 25 percent of their jobs and 21 percent said other. The majority of respondents who said other indicated zero, never or as little as possible (Fig. 22).

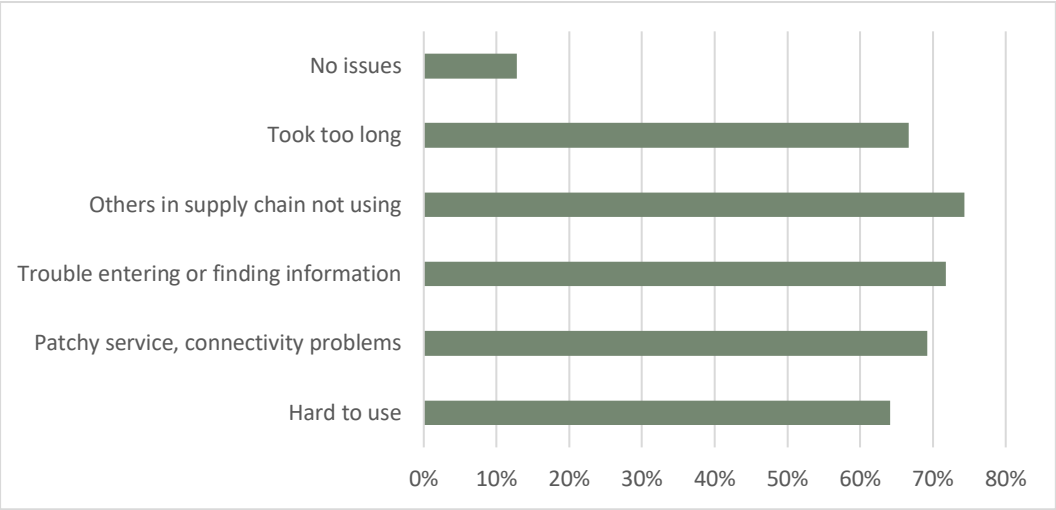
Figure 22. How often respondents use eNVD



Respondents were also asked what worked well when using eNVD. Many respondents skipped this section with only 33 responses. Eight respondents indicating that being able to load without the producer being there as a benefit. Four respondents indicated that it was easy to use and four indicated that it saves time. Sixty-six percent indicated "other" then responded with "Nothing" or something similar. Three respondents indicated that it works well overall.

Respondents were asked if they experienced suggested challenges when using eNVD and how long ago they experienced them. The majority of answers were in the last six months, with only 13 percent indicating no issue. The rest of the responses were each identified by at least 60 percent of the respondents, including time taken, others in supply chain not using, trouble entering or finding information, phone service or connectivity and difficulty of use.

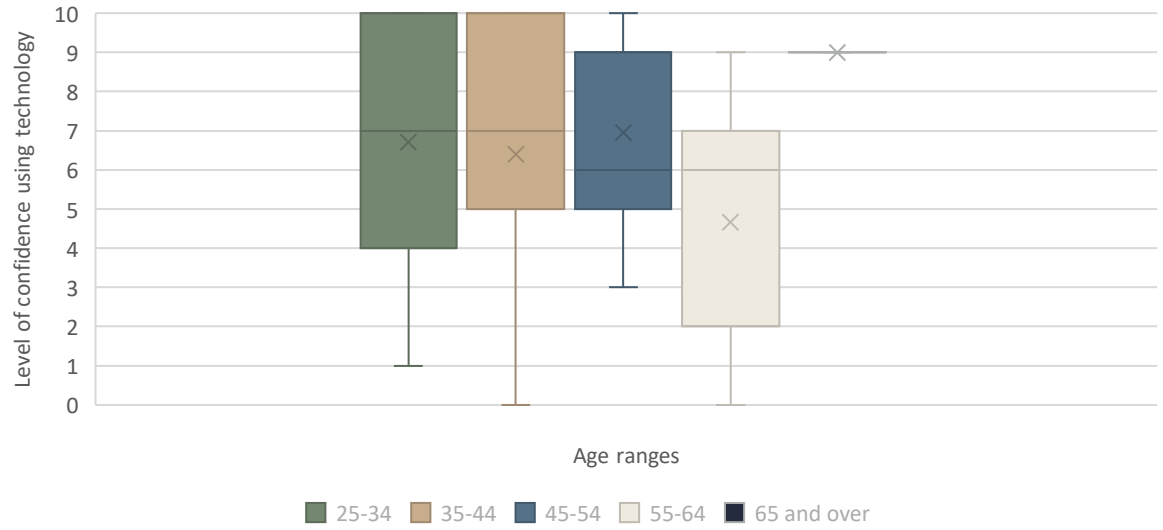
Figure 23. Issues respondents had while using eNVD



4.9.3 Use of digital technology

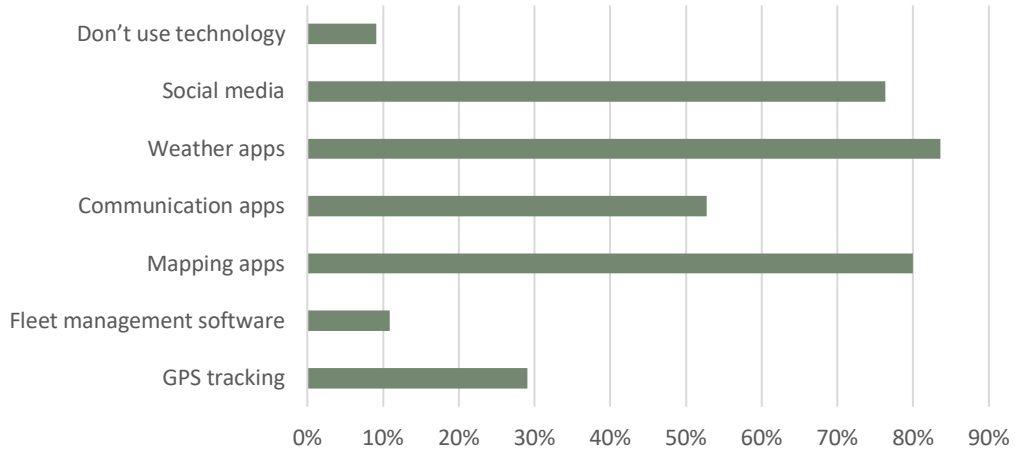
Respondents were asked a series of questions to gain a better understanding of their use of technology. Firstly, they were asked to rate their confidence using digital technology from zero to ten, with zero indicating no confidence and 10 indicating a high level of confidence. The average of all respondents (n= 56) was a rating of six, ranging from zero through to 10. Fig. 24 indicates that when the confidence levels were separated by age group, the average for all age groups was between six and seven except for the 55-64 age group (n= 12), which was 4.7. This age group had more respondents with lower confidence. Interestingly the 65 and over age group had an average of nine, but there were only two respondents in this age group. The other age groups were 25-34 (n=7), 35-44 (n=26), and 45-54 (n= 19).

Figure 24. Levels of confidence using digital technology in different age groups



The respondents were then asked what digital technologies they were using. This question aims to give a better understanding of the respondent's actual ability to use digital technology rather than their perceived confidence. Fig 25 shows that only nine percent of respondents stated that they were not using digital technology. Eighty-four percent of respondents were using weather apps and 80 percent were using mapping apps. Seventy-six percent and 53 percent of respondents were using social media or communication apps (e.g. WhatsApp or Messenger) respectively. Both require the user to go through a sign up and log in process. Only 11 percent of respondents were using fleet management software, which requires regular data entry.

Figure 25. Survey respondents use of digital technology



All respondents besides two were using a smart phone, with 67 percent using an Apple phone, 30 percent using an Android or other smart phone and only four percent not using a smart phone. One of the respondents not using a smart phone stated that they used a Ballistic in-truck phone. These phones are marketed to truck drivers due to ease of use and do not have smart phone capacity. 84 percent of respondent had previously used a QR code.

We would expect to see the respondents to an online survey generally having a higher level of confidence using digital technology than the general population, as they have had to use digital technology to do the survey. It is clear from the survey that there are respondents who do have a low level of confidence and do not use digital technology.

When asked "Does anyone help you with using digital technology?", 73 percent said no. Those that said yes, were asked to say who they get help from. This was free text, so no options were provided by the survey. Table 2 below lists the responses and the number of times this response was given. Similar responses were amalgamated (for instance, "Friend" and "My best friend" are listed in the table as Friend). Eleven out of 19 responses are family members of some description, with a strong focus on female family members.

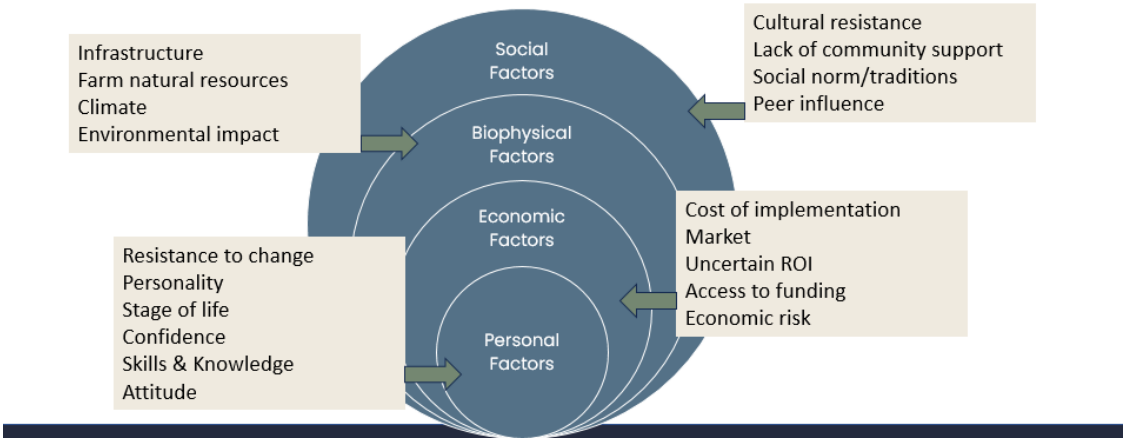
Table 2. Where survey respondents get help with digital technology

Where transporters get help with digital technology	Number of times this response was given
Family	2
Daughter	2
Sister	1
Wife/Partner	6
Admin lady	1
Friend	2
Local computer advisor/tech	2
Staff/colleague	3

5. Barriers to eNVD adoption

Barriers to eNVD adoption identified through the project interviews and survey included elements of personal factors, economic factors, biophysical factors and social factors (Fig 26). Details of these are explored further throughout this section.

Figure 26. Barriers to adoption in agriculture



5.1 Complexity and scale of change throughout the supply chain

Transitioning the supply chain to an electronic system requires each link having a compelling value proposition as well as the knowledge, attitudes, skills and aspirations to make the change to the electronic system. There needs to be a motivation to change from the current system to the new system. The system needs to be considered at a supply chain perspective as well as user perspective.

The scale of the change needed to implement eNVD adoption is enormous. Within each link of the chain each business and their staff members using the system need knowledge and skills to use the system, as well as processes established to support the change. Staff from management, through to administration and receivers at loading and unloading points need to support and use the system.

Some of the barriers impacting transporter adoption will apply to other parts of the supply chain, however further formal consultation is recommended to confirm barriers to adoption of eNVDs for other members of the chain.

Supporting comments:

"I think sort it out first – the system is flawed. Paper NVD trail still works – stop overcomplicating it – let something loose on the market that wasn't ready. Should have consulted all facets of industry – CBH apps all work side-by-side." - Interview comment

"Slow down and get it right instead of trying to rush something into place that has so many working parts that don't fit together properly. Also letting people know would be a good idea." - Survey comment.

5.2 Value proposition

5.2.1 Motivation and value proposition for transporters

A small number of transporters recognised the benefits of working electronically and removing the reliance on paper. Several transporters interviewed and surveyed recognised that if their clients were using electronic NVDs and receivers were set up to receive eNVDs, then they would work out a way to facilitate them. However, of the transport companies interviewed, most advised there was not a strong demand for eNVDs, with a low percentage of clients requesting them. Considering technology adoption needs a clear value proposition – the main benefit for transporters will be meeting client needs.

One transporter had set up the app as he was new to the industry and didn't want to potentially miss out on business if he couldn't facilitate electronic consignments.

If the electronic system can be demonstrated to consistently save transporters time and be more efficient – that would serve as an additional value proposition.

Supporting comments:

"Happy to use them if producer asks." - Interview comments

"Carrier tends to fall in line with what clients want." - Interview comments

"You would need the rest of the supply chain to adopt them. The people on the ground, the drovers, the agents, the livestock carriers all use paper NVDs and the receivers of the stock expect a paper NVD. Until they don't carriers shouldn't be expected to offer them as a default." – Survey response

"We are open to using eNVD if it is requested by processors and producers. We will work in with whatever needs to happen. We have to follow a number of other rules and regulations as train operators." - Interview comments

5.2.2 Well-established paper process

The paper NVD system is well established throughout livestock supply chains across the country. There was strong support for retaining the paper system, particularly in the survey responses. The paper system works without internet coverage or phone service. The paper system accommodates time poor or disorganised farmers who won't pre-fill documentation. In some cases, such as saleyards, paper NVD's serve an additional purpose of being able to note which pen animals are in. The book system provides a handy record of previous transactions without having to login and search online. The book can be used by different staff or family members and can still be used if there is a widespread technological outage.

Any electronic system needs a compelling value proposition i.e. to provide a benefit such as time saving or cost saving to each user that is superior to the current paper process to facilitate adoption.

The need to remove NVD books to facilitate adoption was mentioned in the consultation. One interviewee compared eNVDs to other technologies such as banks or telecommunication where face-to-face and paper options have been limited. This step is not recommended until the technology has been thoroughly tested and proven across a multitude of supply chains and supporting training agreed and rolled out.

- *"Paper nvd is the ONLY way. If you cannot give me a paper nvd, then get your stock off my truck,"*- Survey comment

- *"Probably easier for a driver to fill out a paper form than try and fill in a digital form on phone,"* - Survey comment
- *"Current system works. If it ain't broke, don't f*%k with it,"* - Survey comment
- *"As a transporter and producer I have tried the eNVD as both and it isn't as convenient as the paper book. From the transport side it still has to be emailed and printed at both sale yards and the 4 main abbs we deliver to as well as the feedlots. It shows real bravery to realise that something isn't working and to stop throwing good producers revenue into something that isn't ever going to work".* - Survey comment.
- *"While the paper system is so easy to use, well established and readily available people don't need to change. It may need to be reducing their options like with banking and phone services – take away one of the three options and forcing the change."* - Interview comment.
- *"You would need to make an implementation date and switch every part of the supply chain on it on the one day and make books void."* – Association comment.

5.2.3 Lack of demand from transporter clients

ISC indicated the percentage of digital consignments has remained relatively constant since the eNVD App was launched in March 2023 (Integrity Systems Company 2024). This is reflected in comments from the consultation with transporters suggesting there hasn't been high demand from producers for facilitating eNVDs.

Transporters have consistently said it is not up to them to drive adoption of eNVDs. However, most said they would work out a way to facilitate eNVDs if there was more demand from transporter clients.

Without strong demand from transporter clients or processors to facilitate electronic NVD's there is little motivation for transporters to spend time and money adopting the technology.

Supporting comments:

- *"We've only had probably two with electronic NVDs come through from memory. They were clunky."* - Interview comment
- *"We had a couple of clients try the electronic system. We tried to register as a transporter, it only let me put one registration in, couldn't add any more. That was a couple of weeks ago."* - Interview comment
- *"I've had about two electronic consignments in the last 12 months."* - Interview comment
- *"We've had minimal use, except with (pastoral company) they're on it – they want traceability.*
    - *We set it up on eNVD app, received it with a bar (QR) code. It was on a place with minimal service – it did work."* - Interview comment
- *"I've only had one. He was a cattle producer, in his mid 40's, who had filled out an electronic NVD the night before but when he came to load he couldn't find it. It had disappeared off his phone, he had to go back and get the book."* - Interview comment.

5.2.4 Transporters not involved in the livestock purchase transaction

Several transporters mentioned the NVD was part of the transaction between the buyer and seller of livestock and did not need to involve transporters.

Supporting comments:

- *"With the original paper system it becomes necessary for the transporter to be involved in carrying the NVD as there was no other way to get the paperwork there. Now, there is an opportunity to get it there digitally as truck is driving out of the property.*
  The commercial relationship between buyer and seller for the first time doesn't need to involve a truck taking bits of paper." - Interview comments
- *"Transporter doesn't see why they have to be involved – if we have to be involved it needs to be working correctly. Had many involved with it – one really good driver refuses to use it. It was released too early, it's too complex, too much onus on transporters to make sure it's right."* - Interview comments

Several transporters mentioned they would be happy to be taken out of the NVD process or just have a copy shared with them. From their perspective, transporters only need to have documentation recognised by authorities and that could be transferred quickly, accurately, that is easy-to-use and correct for loads to be accepted at receival.

This highlights the importance of communicating to livestock transporters that their involvement in the NVD and eNVD process is essential for biosecurity and traceability especially in emergency animal disease response. In either instance, sending incorrect information on an NVD or eNVD can result in repercussions to the producer, the receiver or the driver.

5.2.5 Situational barriers – current processes

Saleyards and abattoirs

Several transporters advised of issues and barriers with electronic NVDs at saleyards and abattoirs, including:

- The fast pace of unloading ramps – abattoirs and saleyards are time dependent. Thousands of animals may be transacted on sale days. Loading and unloading ramps are busy with many trucks trying to access at any one time. Documentation handover must be fast paced and easy to use in practice to not delay the process.
- Different staff availability at unloading – head stockman or agents may be at receival points, at times there may be no staff available which may make it difficult to QR code.
- Varied processes within saleyards – different processes were noted for operation of saleyards – both incoming and outgoing stock. There was confusion around responsibility for supplying transporters with NVDs out of saleyards. Some transporters reported saleyards not recognising electronic NVDs. The paper NVD consistently serves a dual communication purpose in saleyards in addition to its intended design of communicating pen numbers of stock as well as the NVD information.
- Complexity of yarding and penning high volumes of animals.
- Safety concerns with phones – working in saleyards requires people to be on alert and looking around for animals coming and going.

Supporting comments:

"*We need to leave paperwork at the saleyards with pen numbers on it for yardman to know where stock are. When there are yardings of 70,000 plus, scrolling through an app is not conducive to an*

efficient working environment for the yards. The current system sends the envds to the agent, not the yardman at the selling complex." - Survey comments

"*You don't want blokes checking their phones in the saleyards to find which pen the cattle are in. It's dangerous, you have to be watching and looking around all the time – if you are looking down at your phone and there are cattle being moved coming at you, you could get hurt. Or if the phone falls out in the saleyards or loading. At the moment the phone is left in the truck the whole time I'm at the saleyards."* - Interview comments

"Every organisation in Australia has their own processes for dealing with eNVDs, no one came to say this is the model. Every site can have its own processes" - Interview comments.

5.3 Social

5.3.1 eNVD reputation

The reputation of the eNVD app system can pose a barrier to further adoption as many transporters perceive the system as cumbersome and unreliable due to past experiences with technical glitches and user interface issues. Some transporters mentioned they have encouraged others not to use it due to the challenges experienced.

Supporting comments:

"It wont work. End of conversation. The only true trusted way is paper nvd". – Survey comment.

"Just leave an unbroken system alone. Paper is easier". – Survey comment

"Everyone that has tried eNVD has since bought a paper copy of printed copies". – Survey comment

"We advise our customers not to use due to above mentioned difficulties." – Survey comment

"They are crap" – Survey comment.

"The time wasted with envds is massive and as transporters we don't have the time to waste with on waiting for them" – Survey comment.

"Refuse to transition to envd's". – Survey comment.

"It's disgusting". – Survey comment.

"Any time I've used it, time is wasted because the technology isn't working." – Survey comment.

Overcoming reputation challenges requires efforts to ensure the system's reliability, provide better training and show clear examples of how eNVD can benefit transporters through successful case studies and endorsements from trusted industry leaders.

5.3.2 Change fatigue and a lack of control

Throughout the consultation, themes of change fatigue and feelings of little control were raised. The introduction of electronic tags for sheep, the cut-off of 3G phone networks and processors implementing new operating systems were mentioned.

Supporting comments:

"*There has been a lot of technology change across the industry with electronic tags, phone service changing – people may be clinging to the book as something they have control over."*

"The more red tape that you put on an industry, leads to companies withdrawing from it and the support for it dwindle. Stop trying to make things hard for regional communities! The microchips in the tags is another nail in the coffin as well!" – Survey comment.

*"How about just have both options. Don't need any more electronic bull**** in the truck"* – Survey comment

5.4 Knowledge and skills

5.4.1 Digital and functional literacy

Digital

Technological literacy was identified as a factor affecting usage however was not considered a significant barrier to adoption. Many of the larger transport companies interviewed and surveyed used a variety of technologies throughout their businesses. Four interviewee businesses used consignment management software and have trained drivers to use. One business said the consignment management technology became too confusing and didn't work in with other apps so they went back to diaries and pens.

Survey respondents reported an average confidence level using technology of 6, with 0 being not confident and 10 being highly confident. Nine percent (n=5) respondents said they don't use technology, despite filling in an online survey. 84 percent (n=46) of survey participants used weather apps and 80 percent (n=44) used mapping apps.

Technology usage by farmers was identified as a barrier to eNVD uptake, with several interviewees and survey participants mentioning many of their clients are older farmers who aren't comfortable with technology.

One driver interviewed mentioned he was not comfortable with using technology however if he had "someone to teach me how to use it" he may learn it. He said he "wouldn't know where to start" with eNVDs. He does use an iPad for truck checks however it is often not working.

Supporting comments:

"Unusable as it is at the moment. For older farmers – no smart phone – no computer – cuts them out. Other older cockies the same. There are a lot of older farmers." – Interview comment

"*A lot of older farmers in Tasmania – they would struggle to use electronic system. A lot of clients haven't got email addresses."* – Interview comment

"*I do have an email address but I don't use it. Wife uses it. I'm not into modern technology. I'm just comfortable with the paper. I like directions over the phone."* – Interview comment from experienced driver.

"*One of mine (drivers) wouldn't be able to forward things on his phone, he has an iPhone but doesn't even text or use social media."* – Interview comment

"*Some of the older drivers took longer to embrace the (consignment management) technology and often the younger drivers would show the older ones how to do it. For an extra bit of tech – once they are using it regularly its OK."* – Interview comment

Functional

Functional literacy of drivers and farmers was identified as an issue in completing NVDs – both paper and electronic. Given 44% of Australian adults read at a low level (ABS 2013), any solution should be as simple and easy to use as possible, considering icons or graphics to support users.

Supporting comments:

"Won't work. Be told get out of your offices & experience real life preparing a load for trucking. Most drivers can't read or write." – Survey comments.

"Sometimes the destination says Elders or Nutrien NSW, often they don't know where going, sometimes destination left off altogether. Sometimes NVDs aren't there at all. One person consigned the sheep to themselves." – Interview comments.

5.4.2 Training and education

Training in how to use the eNVDs was mentioned in consultation with varied responses. Some stakeholders believed more awareness and training was needed. Others suggested they had worked out how to use it themselves. Information from V.ISC.0002 *Bespoke eNVD Adoption for Livestock Transporter Final Report* indicated that small group, intensive education and one-on-one assistance was needed to educate and inform stakeholders on how to use the product.

Given training is essential to technology adoption and adoption has not been widespread, it may be worthwhile reviewing current training programs in line with the adoption strategy to understand which mechanisms are being used by which stakeholder groups and whether there are training gaps in supporting organisations across the supply chain to train staff in the technology. Should ISC develop a reference group, their input and feedback on training materials may be useful as well.

Supporting comments:

"*Absolutely 1/10 for the rollout and communication. The only training that I have seen was a 1 day computer linkup that happened when I was overseas. I have played enough to get me through."* – Survey comment

"*Drivers have no training from mla,"* – Survey comment

"*Someone to teach me to use it."* Interview comment in response to question: 'What would need to change for you to use eNVDs?'

"*Yes – more support and training is needed for eNVDs and electronic tags. I've got a lot of small producers don't know about electronic tags. How do they know about eNVDs?"* – Interview comment

"I set it up as a transporter, it all worked smoothly," – Interview comment.

5.5 Technology barriers

5.5.1 myMLA login requirements for transporters

In line with the above, there was strong resistance from some participants at having to have a myMLA login to facilitate eNVDs. Many believed given they weren't part of the livestock transaction they shouldn't require a myMLA account and individual emails.

On a practical level, the myMLA login created issues for subcontractors who wouldn't have a login as well as changing trucks, taking up too much of drivers' time. Subcontractors and casual drivers are frequently used in the transport industry, with a shortage of drivers noted through the consultation. Some companies believe if they had to have a login it should be one email address for the company with jobs shared out to drivers. However, it was recognised by some this may also cost time for administrators.

Supporting comments:

- *"We are supportive of the eNVD just being shared – we have an admin email address – have an email address that information would flow into – if the information is correct to start with."* – Interview comments
- *"Must be easy to access on phone or tablet without numerous passwords or pin numbers". –* Survey comment
- *"Duplicate copy is the cc – goes to carrier nominated email by livestock carrier – they do their own paperwork – commercially stays with customer and inside our business for our own record."* – Interview comments
- *"Just Cc us in the deal – their end has to be right first. Needs to be a correct document first."*
- *"We are not supportive of the email login for every driver ("that's just bull%&it"). It should go to one central email to be distributed from there."* – Interview comments

5.5.2 PIC registry database

One of the main barriers mentioned multiple times throughout the consultation was the challenges experienced with the PIC search process. Issues included:

- State-administered databases with data fields that don't necessarily align
- Trading names not corresponding with commonly known names
- National agencies with different branches e.g. Elders
- When searching for a destination, the name the user is searching for doesn't match what's on the PIC register (i.e. Dubbo Saleyards is in the PIC database as Dubbo Regional Livestock Markets).

Difficult to find or inaccurate PICs may result in delays for transporters at loading if the consignor is trying to search unsuccessfully or at the point of receival if incorrect details have been entered.

Supporting comments:

"*eNVD puts us in a hard position – they say oh we have emailed through and it still hasn't arrived where it is supposed to go. I've had sheep dropped in Katanning, the eNVD ended up at Elders Adelaide. We have to sit around for 6 hours while they sort it out, because it's not being done right at*

one end or the other. They've got time to sort it out correctly, I do long distance transport, but they just don't." – Interview comments

"*Consigned to..." information does not always pre-populate the correct information e.g. when you type into the "Destination PIC" of [ABCD1234], the eNVD pre-populates the "Consigned to" information as the owner of the Saleyards ("[Example] Regional Council") and not as the operating agent "[Example] Livestock & Rural". This has been an issue since the inception of eNVDs. Many saleyards that are owned by one entity and operated by others have the same problem*." – Survey respondent

"*The driver is still the go to now for checking. Who someone is and who they trade under – fellas have a totally different name. Sometimes farmers might have three different addresses – where the yards are is a different address to where the house is. Then there might be the back yards which have a different address again*." – Interview comments.

"*The PIC register is not looked after by ISC – differently managed by each state and data fields aren't necessarily lining up. Elders Armidale might be in as Elders Australia*" – Interview comments.

"*Better mobile service and take the destination PIC number off"* – Survey response to question: What would need to happen to encourage more transporters to use eNVDs?

5.5.3 Transferring the eNVD app outputs to others

A number of user issues were identified regarding the transfer of the eNVD app outputs to others.

Supporting comments:

"The app on a phone is too small and isn't transmitted to the transporter in the current system". Survey comment.

To validate these concerns, the AgSTAR team testing of the app found the following issues:

- Most QR code transfers including COVID19 check ins, are done using the camera app on phones. However, the QR code from eNVD app, needs to be scanned using the eNVD app.
- It is suggested that the eNVD QR code should have an inclusion of text to ensure that it is being scanned through the eNVD app and not through the 'camera app'.
- When a test eNVD was forwarded as 'share URL' via email, only part of the URL was hyperlinked in the email (see sample URL link below). Hence when you click on it, it takes you to a page that says, "Not Found". The entire URL needed to be copy and pasted into a browser to work.

Sample URL sent from eNVD app (tested 25 July 2024):

https://api.integritysystems.com.au/v2/api/consignments/C-101288639/$print?hash=CfDJ8Ec5yNsTjMNOjUffyY9zPLsthwHffTfNGMko4RsWMtpxNFvxwmSl9XmM8SvTf9mlXrQOe-n2qM-L1Neier9j0of42JBF_74WUG7r0FihhGxSpM0Z4qRqJeVa24Q7ntkHKQ

5.5.4 Internet coverage and phone service

The lack of internet coverage and reliable phone service across much of regional Australia was mentioned in most interviews as a significant barrier to adoption of electronic NVDs.

Whilst it was acknowledged that the QR code sharing functionality aims to overcome the need to have internet coverage, anecdotal evidence suggests this doesn't always work in practice. Issues of cracked screens, screen resolutions not facilitating transfers and face-to-face contact needed were raised. Additionally, the system freezing because of lack of phone service and timing out was raised.

The likelihood of consignors filling in their eNVDs in advance of the trip while they do have service works in some instances, however, it is not always feasible such as when yards may be hundreds of kilometres from offices – such as at stations, yards and stock camps in remote locations.

Producers have an established behaviour of being able to fill in the NVD at loading or just before – when they know who is coming and how many livestock will be loaded.

Consignors needing to update their app once they reach the yards – which was often out of mobile service, was another issue mentioned.

Additionally, the possibility of transporters being pulled up by authorities before they have phone service to show the eNVD was raised as well. If the QR code worked, this may not be an issue, however where the NVD has been sent via SMS or email, this may be a constraint.

Supporting comments:

- *"Phone service is patchy here – there is a fear in the community about losing 3G service- what if the truck is pulled over before they get into service and can't produce documents? –* Interview response
- *"App updates – what happens if you need to update the app when you get to the yards and have no phone service? People won't fill it out the night before."* - Interview response
- *"Internet – 70k north of Wagga – between Wagga and Young, two major regional centres and still have blackspots. Unless farmers send it when we have service and before we get to their property there is nothing we can do. Haven't tried the QR code, but most don't use eNVD's. Happy to try the QR code".* – Interview response
- *"Connectivity needs to be 100 everywhere and people need to be organised to make sure they have theirs done before the truck comes. Issues… oh the printer is not working or out of ink Oh I only thought I needed to print 1 copy Oh my pc won't work today Oh my wife does that and she went to town"* – Survey response
- *"Better mobile service across large parts of the country."* – Survey response
- *"Unless the whole of the country has 100% ph and internet services. The system will not work,"* – Survey response
- *Transporter went to log in to myMLA for consignments – couldn't log in to own account, ended up having to log in as guest*
    - *Had 3 pickups to do that day – couldn't spend too much time on it*
    - *Wont update until reasonable data area*
    - *Timed out before got to service and froze.* (Summary from interview)

5.5.5 Tech support and provision of feedback

Generally, users need to manually lodge a request for assistance with eNVD by phone or email. A negative rating would also trigger a call from tech support. If users are busy and, in a hurry, they may resort to the paper system without logging an issue and receiving assistance and follow up; and if they have had a negative experience, they may not try the electronic system again.

Additionally, the process to capture feedback and issues provided at industry events currently appears inconsistent and relies on an ISC representative who receives feedback at a particular event logging the concerns with ISC.

5.6 Data security and privacy

Concerns around privacy and data security were raised throughout the consultation. Specific issues include:

- Handing over driver's personal phones for inputting data – potentially gives access to personal information
- Concern about the signature process and validity of the signature on the app

Supporting comments:

"*I have concerns about handing over my mobile phone to law enforcement or anyone else entitled to look at an eNVD. My concerns relate to other business and personal information stored on my phone. By handing over a device,* [the respondent believes] *you have basically given them permission to view the data contents of your device*." – Survey comments

"*I have concerns with the assumption that a third party's phone can be used for a transaction – that a carrier will provide their personal device for this process*. *Information going to a driver's mobile phone. That driver goes home with that information on their phone – moral and ethical implications. Usually that information would be handed in, not on their personal phones. Introduces third and fourth parties (carrier and driver) into the transaction."* – Interview comments

5.7 Regulatory and compliance

5.7.1 State and territory regulatory barriers

Research found there were inconsistencies and confusion in the understanding of what documentation is required for transporting livestock into, throughout and out of states and territories.

Legal requirements for each state and territory are provided in Appendix 9.1 and 9.2.

Advice provided in email following an interview from one participant indicated in saleyards in NSW, the saleyards have 24 hours after the sale to complete data input to then print a Statement of Movement Record, however most of the stock has been transported by then.

While police and regulatory authorities in each state and territory have confirmed with ISC that electronic NVDs are endorsed, anecdotal evidence from the project consultation suggests authorities – including police, inspectors, gatehouse and border crossing authorities – continue to request hard copies of documentation. Processes do not appear to have been updated to include electronic certification and paper is still requested for stamping and photocopying.

Supporting comments:

"Got to Yass saleyards with three lots of sheep, ours were one of them. Stock squad were there – gatehouse at Yass – take hardcopy and photocopy. They gave us two copies back and had to give a copy of livestock squad. Police wanted photocopies, a hard copy for their record. Can't do that if it's an electronic copy.

"Deni Highway Patrol wanted a copy of NVD – took a photo of a hardcopy." – Interview response

"Out of a dairy sale didn't have NVD – pulled up at Pinaroo. Border crossing authorities e.g. Yamba. They stamp and photocopy and give it back." – Interview response

"More easily accessible education for older carriers and that the authorities ie NSW police are up to date with the technology" – Survey response to question: What would need to happen to encourage more transporters to use eNVDs?

"Make sure all police in Australia are aware that they are a thing and they don't need a hard copy for their records." – Survey response

5.7.2 Document handover processes in livestock transport

There are also inconsistencies in processes for provision and handling of documents, particularly out of saleyards. Anecdotally there is evidence of incorrect details on NVDs or missing NVDs.

Supporting comments:

- At Dalby saleyards, a driver mentioned he collected the NVD from the saleyard office.
- Drivers mentioned they don't get any paperwork when transporting out of the Wagga Wagga or Dubbo saleyards.
- At Yass saleyards, a driver mentioned a waybill was provided 50 percent of the time for cattle, never for sheep.
- "*I've never seen or heard of anyone getting an NVD out of saleyards*." - Interview response
- *"They (the producers) often want us (the drivers) to help them fill it (the NVD) out."* - Interview response

5.8 User experience

Of the survey question respondents almost half (n=50) had used the website, one third of respondents (n=35) used the app and one third (n=35) had not used eNVDs.

Of those who answered the question on challenges experienced and when (n=39), (refer to Fig. 23) within the last six months at least 60 percent of question responses found it hard to use (n=25), had connectivity issues (n=27), had trouble finding or entering information (n=28), said it took too long (n=26) and said others in the supply chain aren't using (n=29). Sixty-seven percent of respondents to the question said they had never had no issues – meaning they had always had issues using eNVDs.

Data provided by ISC indicated of the 483 helpdesk enquiries received and tagged between January 2023 and February 2024, around 40 percent (n=191) were confusion and frustration and 40 percent (n=194) were eNVD features.

Unfortunately, sentiment around eNVD from those interviewed and those who completed the survey is not overwhelmingly positive. In some cases, negative experiences where there is a paper

alternative is leading to people returning to the paper system. In other cases, it is leading to people discouraging others to use the electronic system.

Whilst there were some positive experiences recounted during interviews, many also reported technical issues with the systems.

Positive experiences:

"It's OK – it's a pain the butt because if not in the office where it can't happen instantly – works OK – got the details on it, it did work"

"I don't particularly like paperwork. Everything went fine, I gave her my email, it appeared in my consignments. It was all there – no problem, I had it, I was already set up as a transporter. I haven't tried it out of service."

Negative experiences:

"Doesn't work, terrible system." – Survey response

"I can't say anything good about it." – Survey response

"They need to look at apps that work properly and no one complains about and take on board what is involved. It shouldn't be so hard. How much drama am I going to have to go through today. Its flawed. Don't just keep adding on – it needs proper consultation across whole industry." – Interview comment

"As a transporter and producer I have tried the eNVD as both and it isn't as convenient as the paper book." – Survey response

"*Any time I've used it, time is wasted because the technology isn't working."* – Survey response

"*We advise our customers not to use due to above mentioned difficulties."* – Survey response

(Transporter) has not been able to put an email address for the transporter section as their own, is unsure whether this is because it is the same email address as her as a producer. She can only submit the eNVD by leaving out the transporter details. – Summary of interview response

Farmer has done two electronic NVDs but has printed while they were draft, before he submitted. Goes back and changes details before submitted – both lots of animals are on the one NVD number (e.g. 12 on one and 10 on the other) – printed form has a DRAFT watermark. – Summary of interview response

"We tried to register as a transporter, only let me put one truck registration in, I couldn't add any more. We have 15 trucks. That was a couple of weeks ago. We have our own cattle – I should set up the transport part – attempted to login as a transport operator – never got back to it. Too hard, too busy." Interview response

"Be able to input driver details electronically on the form (I was unable to do it yesterday)" – Survey response

"The app is not working in real time – if head count is amended, the amendments need to be made by the consignor and re-sent – it won't update the original consignment." – Interview comment

"I had one the other day – she is no fool and she struggled. If it's not done in advance – they've got to ring them get destination, get agent to talk to the receiver to get the address – it's not clear cut." – Interview comment

"Farmers have asked us for help to use them. Many don't like them. It's not easy for many people." – Survey comment

"When envd didn't work I couldn't sign the ven Dec which led to a $600 fine from the Nsw stock squad" – Survey comment

"Book costs you money, electronic costs you time." – Interview comment

Discussions with ISC staff mentioned the following issues:

- The PIC search is the biggest pain point for producers.
- There is confusion around installing and using the app as well as creating consignments – which account to create consignment.
- It is not completely aligned between website and app, optional eNVD sections on the website that are required to be filled on the app.
- Sharing – causes confusion – difficulty using QR code functionality – screen shot of QR code has been used instead of viewing and receiving the QR code within the eNVD app.
- Alternative ways of sharing – limited awareness of SMS or email PDF version to receiver or transporter.

5.9 Gap analysis

Table 3: Limitations of current system to accommodate livestock transport requirements and options to address

Transporter Requirement	Limitation(s) of current system	Options to address
Ease of sign in	myMLA Account – transporters don't see a need for them to have a myMLA account. Adds a step to workload. Difficulties with subcontractors or casual drivers often used in the industry.	• Use a pin code system, SMS verification/enable face ID • Consider transporter-specific eNVD app – similar to transporter app in chicken meat industry Short term: Transporter can fill out their section on the producer's phone. If there is connectivity the producer can send the pdf to the driver. myMLA account can be made for the trucks instead of the drivers.
Easy to search PIC database/ensuring correct information entered at the start of consignment. Note - Whilst this isn't a requirement for transporters, they are impacted by incorrect	PIC database field is difficult to search. PIC database is administered by each state/territory and data fields don't always line up. For example, trading names can be different to place names, properties can have different addresses for yards and houses. Currently consignors may generate a compliant form with incorrect	This is an issue with both paper & electronic system – both can be incorrect. Options include: • Consider supply of PIC and address in transaction correspondence – potentially through education campaign or working with agents as key influence in transactions.

information or delays in searching PIC database.	information – holds up driver at receival.	• Raise the issue to be on the SAFEMEAT agenda: - Consider whether the destination PIC needs to be on the document. - Seek agreement for national standards for assigning PICs with the aim for national consistency.
Easy to use. Fast and more efficient than paper in practice	• Current app may cause delays with 'Sync In Progress', requiring an update, proving difficult to search. • QR code functionality may require screen resolution changes. • Login and registration process not considered easy. Whilst theoretically the app should be able to accommodate these issues and considerable improvements have been made, in practice issues are still being experienced and many within the last six months. Paper system is well established and for drivers is often faster and more efficient than technology if it isn't working properly.	Options include: • Establish a reference group for ongoing testing and feedback to ensure the technology is consistently working in the field. • Promote the sharing capability as an alternative to requiring transporters to log in. • Improve user interface. • Consider transporter specific app. • Promote the importance of ensuring a clear communication chain between the app users noting to each participant that the eNVD app is identified as being part of this consignment.
Works consistently without internet	Consignors will often generate an NVD at the yards which may be out of service. Rural and remote Australia has patchy internet coverage – a concern of transporters if pulled up by authorities before reaching coverage to show eNVD.	• Establish a reference group for ongoing testing and feedback to ensure the technology is consistently working in the field.
Recognition by authorities – police and border crossing	Whilst some discussion has occurred with police – transporters are advising they are still having to produce paper copies for authorities.	• Further discussion needed with Police, border crossing authorities i.e. South Australian government. • ISC to raise this with SAFEMEAT and Animal Health Committee and to seek their assistance with the communication at the state level. This should highlight the importance of eNVD being recognised particularly in an EAD response.
Usable by people who are not comfortable with technology/ no internet/smart phone	Some, usually older, farmers have no smart phones or computer access. Requires someone else to generate eNVD on their behalf.	• Work with agents to offer as a service to clients
Consistently asked for/used within supply	Transporters are not being asked for eNVDs from clients in any large	• Formal consultation with the rest of the supply chain to understand

chain and accepted by receiver at unloading	volume, a very small amount requesting. Several transporters advised eNVDs are not accepted at unloading facilities or saleyards not set up to accept the technology	processes and barriers and ways to increase adoption • Reference group including representation from across the supply chain
Easy to access record of previous consignments	Paper provides a handy and quick reference of previous transactions – can search if enquiry received about a particular job. The app provides 6 weeks of previous eNVDs transporters have been associated with. On the web all past transactions are available to be viewed.	• Review communication on accessing previous records
Clear value proposition for each link in the supply chain	Currently most transporters are not seeing value or advantage from the electronic system.	• Focus on values – risk of business downtime from emergency animal disease outbreak, need for traceability and biosecurity
Consistent systems and processes	Systems are inconsistent between states as well as between saleyards, farms, processors, spelling yards and agents.	• Formal consultation to better understand different systems and processes particularly of saleyards • Testing of app in field in a variety of scenarios.
Socially accepted with a positive reputation	The eNVD system has a reputation for being difficult to use – people within the chain are vocal in discouraging others to use it.	• Testing and improvements to ensure consistently performing across a range of scenarios • Working with reference group to produce case studies and encourage promotion once testing and consistently performing across scenarios
Training	Some transporters mentioned more training in how to use the app would be useful. Consider how to best support businesses in rolling out training to staff. Most of the issues with the app identified result from user error.	• Review current training materials in consultation with reference group • Seek user input into training and support needs
Security and privacy	Some concern with putting personal details into other people's phones. Some concern about signing – validity of the signature component. Some concern about the system getting hacked (not received directly in consultation, an anecdotal comment). State governments approve of digital signature option within the app.	• Review messages on security and privacy • Discuss concerns with transport reference group and ways to address

	eNVD app has appropriate security protocols in place to ensure security of data and safety from hacking.	
Links in with consignment management software	For those using consignment management software, having their existing system certified or integrated with eNVD without having to sign up to an MDC project requiring significant time and investment from the company if demand isn't high. MDC projects aren't required but offer additional financial support	• Confirm most popular consignment management software • Consider discussions with most popular consignment management companies e.g. My Trucking to understand potential to integrate with eNVD
Technical support	Current system does not automatically trigger an alert when user experiences an issue.	• Continue offering rapid tech support • Consider to what extent automated triggering of tech support is possible when an issue is experienced to capture those in a hurry who won't necessarily report issues
Works without face-to-face interaction with others	Transporters collecting animals from spelling yards often won't have face-to-face contact with yard operators or previous drivers	• Test spelling yard scenario in the field to more thoroughly understand options and possibilities • Communication with state governments required to understand what detail is required on the eNVD from each of the parts of the supply chain
Contingency if it doesn't work/IT outage	Currently the book is the backup if there is an outage	• Retain paper NVD system until electronic system more widely tested and consistently proven in a variety of in-field scenarios •

6. Conclusion

Research indicates the state of technology uptake in Australian agriculture is considered relatively immature. This was supported by statements throughout the consultation around Australian agriculture being slow to change. Technology needs to consider the users in design, have a compelling value proposition, be easy to use and offer a cost benefit.

The livestock transport supply chain in Australia is complex, varied and time-dependent. The paper NVD system is well established and overcomes the issues of poor internet coverage and phone reception in rural and regional locations where most livestock movements take place.

The need for transporters to be involved in the NVD process was questioned by several transporters, who mentioned the NVD animal treatments and market access was part of the transaction between the seller and buyer, with transporters only needing the waybill component.

Whilst most transporters were supportive of the concept of eNVDs being shared with them, few are supportive of having to sign up to the myMLA system and create individual logins for each driver.

Many transporters who participated in the consultation had experienced a range of difficulties using the eNVD system, many within the last six months, from technical outages to incorrect details being provided resulting in hours of delays from it not being accepted by authorities or receivers. Unfortunately, the negative experience has resulted in some discouraging others to use it, or completely avoiding the system altogether.

Further consultation with feedlots, processors, livestock agents, saleyards and producers may be useful to understand barriers experienced by the rest of the supply chain. Pilots and extensive in-field testing involving each linkage of the chain may also assist in understanding issues faced by each and improvements in the system.

Until ISC can be confident the technical issues have been resolved and feedback from widespread in-field testing is consistently positive, there is little point investing in further adoption of the technology. Encouraging more people to use the technology while it is still experiencing technical or user difficulties could be more damaging with their first experience being a negative experience.

There is potential for increased adoption of electronic consignments working with feedlots and processors who may have regular consignments from consistent suppliers, avoiding the need to search the PIC registry database. There may be a more compelling value proposition for efficiencies of scale and potentially the ability to work in with feedlot and processors existing systems and linking in regular transporters to build usage and test the system. However, consultation to fully understand feedlot and processors current systems, processes and barriers may be worthwhile before investing time and effort in encouraging uptake.

Transporters provide a service to clients and adoption of technology by transport companies will ultimately be dependent on demand from clients, cost and time efficiencies and ease of use of the system.

6.1 Key findings

- The paper NVD system is well established across the livestock supply chain throughout Australia. It is fast to transfer for livestock carriers and overcomes many of the barriers digital technologies experience.
- There are inconsistencies in how the paper NVD is being completed currently. For example, the consign to section and destination is confused, and there are cases where people other than producers complete the NVD on producers' behalf.
- The livestock transport industry is fast-paced, often with high volumes of livestock being loaded, transported and unloaded in time-dependent circumstances to meet curfews of processors or abattoirs and accommodate different jobs in one day.
- Staff shortages across the livestock transport industry mean subcontractors and casual staff are regularly required.
- Carriers frequently transport multiple lines (mobs) of livestock in one load.
- Any digital process must be simple, easy-to-use, quick to accomplish tasks and perform consistently, without adding to the workload of transporters.
- Livestock agents are often involved in contacting the transporter and booking in the consignment on the client's behalf. This makes them a key stakeholder in the transaction and transfer of information required for the NVD including destination name, address and Property Identification Code (PIC).
- There is limited support for transporters having to log in to myMLA to access NVDs.
- Any digital process must be consistently useable without internet coverage as much of the livestock transport throughout Australia takes place without reliable internet or phone service.
- Transporters have experienced significant technical difficulties with the current eNVD technology, contributing to a less than favourable reputation for eNVDs.
- There is still a large area for improvement in the knowledge and understanding of eNVDs by the police who are 'on the ground' carrying out checks.
- Many transporters interviewed rely on a paper diary to manage consignments. A number of the larger companies have implemented consignment management software.
- Most transporters are using technology in some form. Mapping apps, weather apps and social media apps had the highest usage from those surveyed.
- Transporters advised incorrect details on eNVDs have resulted in hours of delays for them at receival points.
- Transporters have not had a high demand for electronic NVDs however advised if clients were requesting it and the technology worked, they would facilitate them.

6.2 Benefits to industry

Transporters are a crucial link in the Australian red meat supply chain and engaging with them directly through this project has addressed a current gap in formal consultation and data collection with users. By understanding transporters as users of eNVD technology as well as the scale and complexity of livestock journeys across Australia, the project has identified various barriers to adoption impacting uptake of digital traceability technology nation-wide and made suggestions to overcome those barriers.

The consultation has provided insight into the challenges faced by livestock transporters and allowed the transport sector to provide input into potential solutions.

The project has also pinpointed areas throughout the supply chain that would benefit from further consultation to understand systems and processes with the goal of ultimately enhancing efficiency, collaboration and traceability across the industry.

7. Recommendations and action plan

It is proposed that ISC consider reducing investment in communicating and promoting the eNVD app until the below recommendations are considered and where possible, implemented.

Recommendation 1:
Transporter focus group
ISC to develop a small transporter focus group to engage with and to seek feedback directly from the users/transporters to:

- help guide/test the implementation of the report recommendations
- consider whether an eNVD Transporter app would improve user experience
- co-design the features in the eNVD Transporter app if separate app is progressed.
- guide, 'test' and pilot the changes in real time transport scenarios
- identify industry training and support needs
- act as conduits to communicate updates to transporter colleagues/industry connections and seek feedback on experiences.

This group may also be able to assist with hosting ISC staff for field testing once relationships are established. Several transporters interviewed have expressed willingness to participate in such a group.

Recommendation 2: Improve the eNVD user interface
ISC to focus on simplifying the eNVD user experience for transporters by considering the following and discussing/testing with transporters:

a) refine the eNVD interface to make it more user-friendly and intuitive for transporters;
b) investigate alternate options (i.e. SMS code verification) to remove the need for transporters to require a myMLA sign in to use the eNVD app.
c) allow QR code scanning through the phone camera function without having to scan through the app.
d) continue to improve through considering feedback in ongoing consultation, pilots and in-field testing.

Recommendation 3:
Mobile phone safety messages
It is recommended that ISC consider the inclusion of mobile phone safety messages in all ISC eNVD communication collateral (including the app). These should be supported by icons.

Example mobile phone safety messages:

- *Before using the eNVD app on your mobile phone, ensure that you are in a safe area away from livestock.*

- *Handheld operation of mobile phones is not permitted when driving a vehicle. Whilst using the eNVD app, you must ensure that you are stationary with the brake applied* (source: adapted from CBH Driver Checklist for CBH mobile applications).

Recommendation 4:
Clear communication of eNVD benefits and linking to the transporter's role in traceability
To help address some of the resistance from the transport sector regarding the need for their involvement in the eNVD process, communicate the reasons for transporter involvement, including:

- Enhanced biosecurity and traceability, especially in the context of emergency animal disease (EAD) response using Foot & Mouth Disease (FMD) as the example.
- The chain of responsibility and animal welfare (fit to load and during transit).
- Compliance with regulatory requirements.

Recommendation 5:
Documentation tracing in an EAD
To further support recommendation 4, ISC to source updated statistics/costings on estimated time taken to trace documentation (paper versus electronic) in the event of an EAD.
This could be used to support messages of less business downtime for transporters in such an event.

Recommendation 6:
eNVD working group/reference group
ISC to establish an eNVD working group/reference group with members of each sector of the supply chain with representation across the nation.

The group should have a defined Terms of Reference (ToR) with the purpose of this group to include, but not be limited to, the following:

- provide ongoing feedback on in-field issues experienced with the eNVD app to encourage improvement
- to share updates with and seek feedback from their respective networks
- strengthen linkages across the supply chain
- identify industry training options to support adoption
- encourage learning from each other and an understanding of the barriers and scenarios faced by each sector.

Recommendation 7:
Consultation projects with other users in the supply chain

It is recommended formal consultation projects, similar to this project, be undertaken with stakeholders across the supply chain, including feedlots, livestock agents, processors, saleyards and producers to:

- understand current processes for NVD document management and transfer
- understand why paper is still largely preferred by agents and saleyards
- understand the barriers to eNVD adoption and ways to overcome these
- answer some of the questions in the further research section in appendix 9.2.

This consultation should involve different levels of staff who use eNVDs including staff in administration/office, at unloading/receival and management including those who make decisions to capture a range of user and management perspectives and experiences.

Recommendation 8:
In-field testing and piloting
While it is beyond the scope of the transport sector, it is recommended ISC test the eNVD app in the field across a variety of supply chains to enable consistent feedback and improvements. In-field testing will also build knowledge across stakeholders involved and create potential content for case studies and testimonials.

As part of the in-field testing it is recommended to continue the currently scheduled pilot projects.

- Opportunities to potentially partner with a larger rural agency such as Elders or Nutrien to pilot the technology across regions and assess outcomes in different locations may be considered. The potential for supporting with a Digital Product Officer may be mutually advantageous.

In-field testing may include field visits by ISC user experience staff to meet with transporters and go "on-the-road" with them to understand their experience and application of the technology in different scenarios. This could be accommodated by a communications campaign to demonstrate ISC has listened, is working to understand user experience of eNVD in the field and will work to improve. Short videos and photos from staff would provide engaging content for ISC social media channels showing the people behind the technology "getting out in the real world".

Recommendation 9:
Further discussion with authorities
ISC to initiate further consultation with all state and territory authorities and operating state border controls to:

- Understand their requirements – are paper copies necessary
- Explain the technology
- Understand how can eNVD be recognised and communicated to all highway patrol/stock squads nationally.

There may be opportunity ISC to raise this with SAFEMEAT and Animal Health Committee, and to seek their assistance with communication at the state level. This should highlight the importance of authorities accepting eNVD particularly in an EAD response.

Recommendation 10:
Industry advocacy for improved phone and internet coverage
Recommend that ISC works with the Peak Industry Councils to support them to advocate for improved phone and internet coverage across rural and remote Australia to allow Australian agriculture to support uptake of technology, facilitate traceability, efficiencies and global competitiveness.

Recommendation 11:
eNVD integration with consignment management software
Consider potential for integration with consignment management software. Several transporters are already using consignment management software and inputting the same data needed on a waybill. Consider discussions with developers of the various consignment management software companies to understand the potential to incorporate eNVD components into the software e.g. My Trucking App.

Recommendation 12:
Refined feedback process
It is recommended ISC revisit their processes for recording and responding to feedback received from industry events/field days etc. Anecdotal evidence suggests the process is unclear, with stakeholders not always receiving an answer or having the loop closed. This may contribute to feelings of frustration and a negative association with the technology.

Recommendation 13:

A) Final report communications

To support the release of the public version of the report, and demonstrate they have consulted and will consider the feedback received, ISC consider the development of communications to outline that ISC:

- Recognise that users are the heart of this technology
- Has carried out initial consultation with transporters across Australia
- Has heard the user experience with eNVDs may be varied across different transport scenarios
- Will review recommendations and (depending on acceptance of recommendations) conduct further testing to ensure the technology can consistently perform in field in different conditions
- Encourage those who are using the technology successfully to continue to utilise the technology and to share any feedback with ISC
- Thank everyone who gave their time to provide feedback

ISC should share a copy of the public version of the report with those who participated in the consultation to close the loop and demonstrate how their feedback has been considered. This may also form the basis for an invitation to the transporter focus group for those who wish to continue their involvement.

B) Review eNVD communications

- Communications on preparing to use eNVD: Prior communication to those involved in the journey is important to ensure transporters can be prepared to facilitate eNVD's particularly if the loading area is out of mobile reception. Consider reviewing existing communications to ensure producers/agents communicate to transporters:
    - Advise they will be using eNVD app
    - Check their transporter has the eNVD app
    - Provide their PIC and details needed
    - Transporters to open and update app while in service
- Platform differentiation: To reduce confusion between the different processes outlined above, it is recommended that ISC review its eNVD communication strategy to clearly differentiate between eNVD web and eNVD mobile app.

Recommendation 14:
Monitoring and evaluation
ISC may consider using the 2024 eNVD transporter survey as a baseline and that an online survey be conducted again two to three years after the implementation of these recommendations to track transporter sentiment in using eNVDs.

Recommendation 15:
eNVD linkage with NLIS movements
Given the increasingly electronic nature of livestock management within Australia, scanners at facilities and eID, thought may also be given to whether there would be any efficiency gains or possibility of linking the NVD with NLIS movements to reduce duplication.

Action plan

AgSTAR Projects recommends ISC consider approaching the recommendations in the following timeframes:

Immediately (1-6 months)

- Recommendation 1 – Developing the transporter focus group
- Recommendation 13 – Communication actions
- Recommendation 3 – Mobile phone safety messages
- Recommendation 9 – Further discussions with authorities

Short term (6-12 months)

In the short term, it is suggested ISC consider the following recommendations:

- Recommendation 2 – Improvements to the user interface – in consultation with the transporter focus group – discuss improvements to the user interface. This will be ongoing depending on the results of ongoing testing
- Recommendation 7 – Consultation projects with other users in the supply chain
- Recommendation 8 – In field testing and piloting (this should be ongoing as improvements are made)

Medium term (12 months – 2 years)

- Recommendation 4 & 5 – Developing communication messages on the benefits and reasoning for transporters to be involved in the eNVD process and sourcing costing/time data to compare electronic/paper tracing in the event of an EAD.
- Recommendation 6 - Develop an eNVD reference group – with representation across the supply chain.
- Recommendation 11 – Integration with consignment management software
- Recommendation 14 – Monitoring and evaluation

Long term (3-5 years)

- Recommendation 10 - Continue to advocate for improved phone and internet coverage
- Recommendation 12 – Refined feedback process
- Recommendation 15 – eNVD linkage with NLIS movements

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9. Appendix

9.1 State/Territory Legislation

9.1.1 Livestock movement records (NVDs)

Jurisdiction	Legislation	Retention Period	Mandatory information
QLD	Biosecurity Act 2014 – Chapter 7, Division 4, s195	5 years	A copy of the movement record must be kept by the person completing it and the person receiving cattle, sheep, goats. For the movement record requirement, a movement record that relates to the movement of a designated animal is in the appropriate form if it is a document in hard copy or electronic form that clearly sets out the following information— (a)the name of the person completing the record; (b)details sufficient to identify the place from which the designated animal is being moved; (c)where the designated animal is being moved to, and the name and address of the person who is to receive the animal; (d)the proposed date of the movement of the designated animal; (e)the species and breed of the designated animal; (f)a description of the designated animal or, if the animal is part of a group of designated animals that are moved from the place where the animals are kept, a description of the group, including, for example, any distinguishing marks or features on the animal or group that may be sufficient to identify the animal or group; (g)other information prescribed under a regulation.
Victoria	Livestock Disease control Regulation 1994 – Part 2, Division 1, s8A Livestock Disease Control Regulations 2017 - Part 10—Records of sale, purchase and movement of livestock	7 years	Buyer of livestock and seller of the livestock must keep: A declaration under subsection (1) must— (a) be clear and legible; and (b) be made in a form approved by the Secretary; and (c) contain the information required by the Secretary including— (i) the property identification code that identifies the property from which the livestock are to be moved; and (ii) the date on which the livestock are to be moved; and (iii) the number of the livestock being moved; and (iv) the name and signature of the person making the declaration; and (v) the date the declaration is made; and

Jurisdiction	Legislation	Retention Period	Mandatory information
			(vi) the intended destination of the livestock; and (vii) any other prescribed particular. Livestock Disease Control Regulations 2017 S.R. No. 57/2017: For the purposes of section 8A(2)(c)(vii) of the Act, the prescribed particulars are— (a) in the case of cattle, pigs, sheep and goats— (i) the name of the owner of the livestock or the trading name of the owner of the livestock; and (ii) the physical address of the place from which the livestock are being moved; and (iii) the unique serial number on the form approved by the Secretary under section 8A(2)(b) of the Act; and (iv) the property identification code of the property of destination or, if not known, the name of the owner of the property of destination and the address; and (v) whether the livestock have been bred by the owner making the declaration and if not, the period of time the livestock were kept on the property from which they are to be moved; and
Western Australia	Biosecurity and Agriculture Management (Identification and Movement of Stock and Apiaries) Regulations 2013 [the BAM (IMSA) regulations]. Part 8, r 189.	7 years	Regulation refers to a waybill. Movement documents must be completed in triplicate and all copies kept for seven years. The original must travel with the stock and be handed to the consignee, or recipient of the stock, at the destination. The carrier retains the first copy and the second copy remains with the consigning owner. A waybill must be in the form of a legible document that contains the following — (a) a serial number; (b) the name and signature of the person providing the waybill; (c) the name and signature of the carrier; (d) the details of the number plate of each vehicle in which the consignment is to be carried; (e) the name, or trading name, of the owner of the animal or animals in the consignment (whether or not that person is providing the waybill) or, if the consignment is being moved to a pound and the owner is not known, words to the effect that the owner is not known; (f) the name of the person to whom the animal is, or animals are, consigned; (g) the species, breed, sex and age of the animal or animals in the consignment; (h) the number of animals in the consignment; (i) if the animal is, or animals are, being moved from a property other than a saleyard — the relevant PIC and street address of the property from which the animal is, or animals are, being moved; (j) if the animal is, or animals are, being moved from a saleyard —

Jurisdiction	Legislation	Retention Period	Mandatory information
			(i) the relevant PIC of the property on which the animal was, or animals were, last kept by the vendor of the animal or animals before being moved to the saleyard; and (ii) the name and relevant PIC of the saleyard; (k) the relevant PIC and street address of the property that is the destination of the consignment; (l) the details required under regulation 194 relating to identifiers; (m) if the animal is, or animals are, being moved without identification under the authority of a movement permit — the serial number of the movement permit and the date it was granted; (n) the date of the movement of the consignment from the property.
New South Wales	Biosecurity (NLIS) Regulation 2017,v Part 4, Division 1. Part 9 of the *Local Land Services Act 2013* (the LLS Act) and Part 8 of the Local Land Services Regulation 2014.	7 years	***Refers to it as delivery information / declaration*** - the type of stock and the number of each type of stock, - the date the stock left the previous property, - the property identification code of the previous property, - the unique serial number of any NLIS movement document created in relation to the delivery of the stock, - in the case of pigs, sheep or goats— - the relevant identification particulars of the pigs, sheep or goats, and - whether the pigs, sheep or goats were bred on the previous property, - a completed delivery declaration that includes the following— - the name and signature of the person preparing the declaration, **Note—** - This will be the owner of the stock (see clause 34 (a)). - the date on which the declaration is made, - the property identification code of the property to which the stock are to be delivered (or if the code is not known or readily available, the name and address of the person to whom the stock are to be delivered). A Transport Stock Statement (TSS) is referred to in legislation. Livestock Production Assurance (LPA) National Vendor Declaration and Waybill (NVD) for cattle, pigs, sheep, and goats; and European Union Vendor Declarations for cattle are approved as a TSS in NSW. Movement documents must be completed in triplicate and all copies kept for seven years. The original must travel with the stock and be handed to the consignee, or recipient of the stock, at the destination. The carrier retains the first copy and the second copy remains with the consigning owner.
South Australia	Livestock Regulations 2013 Part 1 ,s2	7 years	Whenever stock are moved off the property, they must be accompanied by a movement document, this is usually a National Vendor Declaration. Sheep and lambs must also be accompanied by a Sheep Health Declaration.

Jurisdiction	Legislation	Retention Period	Mandatory information
Tasmania	Animal (Brands and Movement) Regulations – Part 4, section 22. A General Biosecurity Direction issued 29/09/2022 is in force for 5 years (29/09/2027)	7 years	A copy must be kept by both parties (buyer and seller) Regulation refers to*: national vendor declaration number* means the serial number printed on a national vendor declaration form issued by Meat and Livestock Australia Limited (ABN 39 081 678 364); Provide within 7 days of the movement in regulation General Biosecurity Order the requirement to provide is on delivery.
Northern Territory	Livestock Act 2008 – Part 3, Division 2, section 20 (2)	7 years	Example of how to fill in a waybill (nt.gov.au) Require NT Waybill Do not recognise LPA NVD as movement record. An NT Waybill is required for all movements of alpacas, llamas, buffalo, bison, camels, cattle, deer, goats, pigs and sheep originating in the NT. A species-specific NT Health Certificate and Waybill is required for all movements of alpacas, llamas, buffalo, bison, camels, cattle, deer, goats, horses (including mules & donkeys), pigs, queen bees and bee products, and sheep moving from interstate into the NT.
Australian Capital Territory -	Animal Diseases Act 2005 Part 4, Division 4.4	7 years	Referred to as delivery information and declaration in the legislation. Required information: a) the kind of stock and the number of each kind of stock; b) the date the stock left the previous property; c) the property identification code of the previous property; d) the serial number of any NLIS movement document created in relation to the delivery of the stock; e) for pigs, sheep or goats— f) the relevant identification particulars for the pigs, sheep or goats; and g) whether the pigs, sheep or goats were bred on the previous property; h) completed delivery declaration that includes the following: i. the name and signature of the owner of identifiable stock who is making the declaration; ii. the day on which the declaration is made; iii. the property identification code of the property to which the stock is to be delivered (or if the code is not known or readily available, the name and address of the person to whom the stock are to be delivered).

9.1.2 State & Territory Legislation Requirements - NLIS Identification & Movement Recording

Juris-diction	Link to Legislation	PICs	Transfer timeframe	Identification	Tag Ordering	Branding
QLD	*Brands Act 1915* Biosecurity Act 2014	No agent PICs PIC and RBE needed: cattle, sheep, goats, pigs, bison, buffalo, deer; or alpacas, llamas, or other animals from the Camelidae family; or horses, ponies, donkeys mules, zebras or other animals from the Equidae family • 100 or more birds that are raised for human consumption QLD Biosecurity issue and renew RBE every three years.	48 hours of livestock being moved.	Cattle – eID - white breeder - orange post breeder Sheep and goats - yellow or year of birth colour is optional for breeder - pink for post breeder - 1 Jan 2025 – kids/lambs eID - 1 Jan 2027 – all sheep and goats eID All cattle, bison, buffalo, sheep, pigs and goats must be fitted with an approved NLIS device when moving between properties identified with a different PIC.	QLD DAF Order form must be supplied when ordering Tags.	Cattle must be branded when they are offered for sale in Queensland. Exemptions exist for any of the following: • registered stud cattle sold at approved stud cattle sales • calves under 100kg live weight • cattle from another state or territory, if they are either: • taken directly to an abattoir; or • have been purchased over the scales at the feedlot in Queensland and are kept at a registered cattle feedlot in Queensland until they are slaughtered.
WA	Biosecurity and Agriculture Management (Identification and Movement of Stock and Apiaries) Regulations 2013 [the BAM (IMSA)	Properties with cattle, sheep, goats, pigs, horses, donkeys, deer, alpaca, llama, camels, buffalo, emus, ostriches and poultry. DPIRD Brands Office	48 hours of arrival, even if you own both PICs.	Cattle – eID - white breeder - orange post breeder - right ear Sheep and goats - year of birth colour is mandatory for breeder. - pink for post breeder	No additional requirements	Branding is optional

Juris-diction	Link to Legislation	PICs	Transfer timeframe	Identification	Tag Ordering	Branding
	regulations]. Part 8, r 189.	allocates PIC and brands. If not renewed the PIC moves to redundant.		- male left ear - females right ear - 1 Jan 2025 – kids/lambs eID - 1 Jan 2027 – all sheep and goats eID Must be identified before moving off a PIC.		
NSW	Biosecurity (NLIS) Regulation 2017	Don't send Feedlot Type PICs to NLIS Anyone who keeps or owns livestock needs PIC. one or more cattle, sheep, goats, pigs, deer, bison, buffalo, camelids, equines (i.e., horses and donkeys), 100 or more poultry birds or 10 or more emus or ostriches. Local Land Services issue PICs	2 days or before they are moved to another property, whichever occurs first.	Cattle – eID - white breeder - orange post breeder Sheep and goats - yellow or year of birth colour is optional for breeder. - pink for post breeder - 1 Jan 2025 – kids/lambs eID - 1 Jan 2027 – all sheep and goats eID Must be identified before moving off the PIC.	No additional requirements	Not legislated. Optional
SA	Livestock Regulations 2013	Don't send Feedlot Type PICs must have a PIC if they keep 1 or more cattle, buffalo, bison, sheep, goats, horses, donkeys, mules, pigs, deer, alpacas, llamas, camels or commercial poultry birds.	2 days of the movement for cattle 7 days of the movement for sheep and goats.	Cattle – eID - white breeder - orange post breeder Sheep and goats - yellow or year of birth colour is optional for breeder. - pink for post breeder - 1 Jan 2025 – kids/lambs eID	No additional requirements. For Cattle tags– tags suppliers add on extra levy and then	Brands Act 1993 was repealed in 2016. No legal requirement to brand in SA.

Juris-diction	Link to Legislation	PICs	Transfer timeframe	Identification	Tag Ordering	Branding
		Only 1 PIC is needed per property. Properties with multiple blocks of land within 100km of each other only need 1 PIC. Blocks of land further than 100km apart from each other will require more than 1 PIC. PIRSA issue PICs		- 1 Jan 2027 – all sheep and goats eID Must be NLIS Identified before moving off PIC.	pay this to SA Gov for cattle fund scheme.	
Tasmania	Animal (Brands and Movement) Regulations – Part 4, section 22. General Biosecurity Direction issued 29/09/2022	If you buy, sell, agist, loan or borrow any livestock (even a single animal) you MUST obtain a (PIC).	Biosecurity Direction issued in 2022 requires: 2 days of movement for cattle, sheep and goats. Under regulation not in force: 7 days for cattle movement No requirement to transfer sheep and goats in NLIS.	Cattle – eID - white breeder - orange post breeder Sheep and goats - yellow or year of birth colour is mandatory for breeder. - pink for post breeder - 1 Jan 2025 – all will be eID.	Tag suppliers also have to verify the PIC on Tasmanian PIC register (TAPDB).	Sheep and cattle must be earmarked before they reach 6 months of age with an earmark that is registered by the Registrar of Brands. The earmark must be applied to the near (or left) ear of male stock and the far (or right) ear of female stock. Body brands are optional.

Juris-diction	Link to Legislation	PICs	Transfer timeframe	Identification	Tag Ordering	Branding
NT	Livestock Act 2008 – Part 3, – Division 2, section 20 (2) Livestock Regulation 2009	No Agents PICs issued Regardless of how big or small the property is, how many animals you have, or if they are pets, if you are keeping any of the listed animals then you must have a registered PIC.	Cattle - 48 hours of the stock moving.	Cattle – eID - white breeder - orange post breeder Sheep are prohibited in the NT. Goats: - yellow or year of birth colour is mandatory for breeder. - pink for post breeder	No requirements	It is a legislative requirement in the NT that all cattle over the age of 8 months are branded with a registered brand prior to movement off a property.
Victoria	*Livestock Disease control Regulation 1994* Livestock Disease Control Regulations 2017	PIC's required for cattle, sheep, goats, pigs, alpaca, llamas, deer, horses, camels, more than 50 poultry or more than 10 emus or ostriches. All livestock businesses, including saleyards, cattle scales, abattoirs, knackeries and stock agents, must have a PIC. PICs are allocated to a parcel of land that may consist of more than one block within the one locality, operating as part of one livestock enterprise. As long as the land on which the	2 days of livestock arriving at the new property or before the animals leave the property if within 2 days.	Cattle – NLIS approved eID Sheep & Goats – eID since 2016 Sheep and goats – year of birth colour is optional Exemptions for earless, miniature and dairy goats.	NLIS tags are ordered through Tag Room. $10 fee for each order. Levy payable by interstate producers when sending sheep/goats into Victoria to cover cost of adding an eID.	Not legislated. Branding is not encouraged.

Juris-diction	Link to Legislation	PICs	Transfer timeframe	Identification	Tag Ordering	Branding
		livestock are agisted and leased is in the same locality (in the same shire or in a neighbouring shire), then both blocks of land can be covered by the 'home' PIC. When livestock are offered for sale, given away or bartered via online or print media, the PIC of the property at which the livestock are kept must be included in the advertisement. This includes all Victorians who own or keep livestock that are required to have a PIC.				
ACT	Animal Diseases Act 2004	Must be obtained where keeping (i) identifiable stock; (ii) camelids; (iii) deer; (iv) equines; (v) 100 or more small poultry; (vi) 10 or more large poultry; and (c) a property identification code is not allocated for the property. Needed for: (i) an abattoir;	2 days	Cattle – eID - white breeder - orange post breeder Sheep and goats - yellow or year of birth colour is mandatory for breeder. - pink for post breeder Unsure on sheep and goat eID timeframes Exemptions		Branding is not compulsory

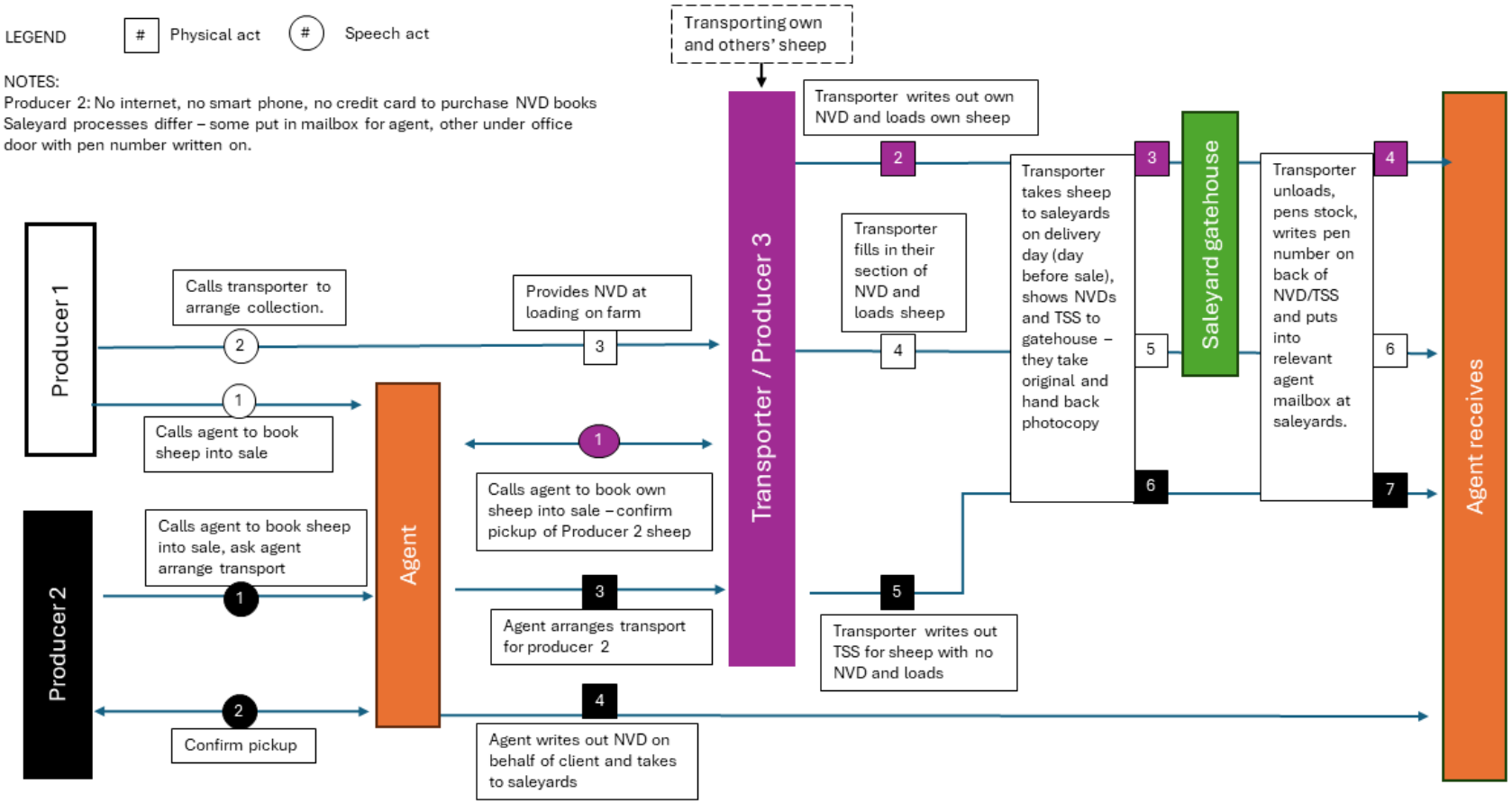
Juris-diction	Link to Legislation	PICs	Transfer timeframe	Identification	Tag Ordering	Branding
		(ii) a saleyard; (iii) a stock event; and (b) a property identification code is not allocated for the property or premises.		(a) the identifiable stock is a carcass that is moved directly to— (i) a waste management facility that is authorised to accept the carcass; or (ii) the National Zoo and Aquarium; (b) the identifiable stock (other than a pig) is moved— (i) from the property on which it is located (the first property) to a contiguous property and returned to the first property within 2 days; or (ii) from the property on which it is located (the first property) to a contiguous property because the stock is grazed continuously between the first property and the contiguous property; or (iii) to another part of the same property by a route that requires the stock to leave the property; (c) the identifiable stock is moved for display at the National Zoo and Aquarium; (d) for identifiable stock that is a dairy goat or a goat that was born without ears—the identifiable stock is moved to somewhere other than a saleyard or abattoir; (e) for identifiable stock that is a feral goat that has been		

Juris-diction	Link to Legislation	PICs	Transfer timeframe	Identification	Tag Ordering	Branding
				captured from the wild—the identifiable stock is moved from the property on which it was captured to an abattoir; (f) the identifiable stock being moved is a pig that will continue to be owned by the same person following the move; (g) the identifiable stock is moved because of an extreme emergency.		

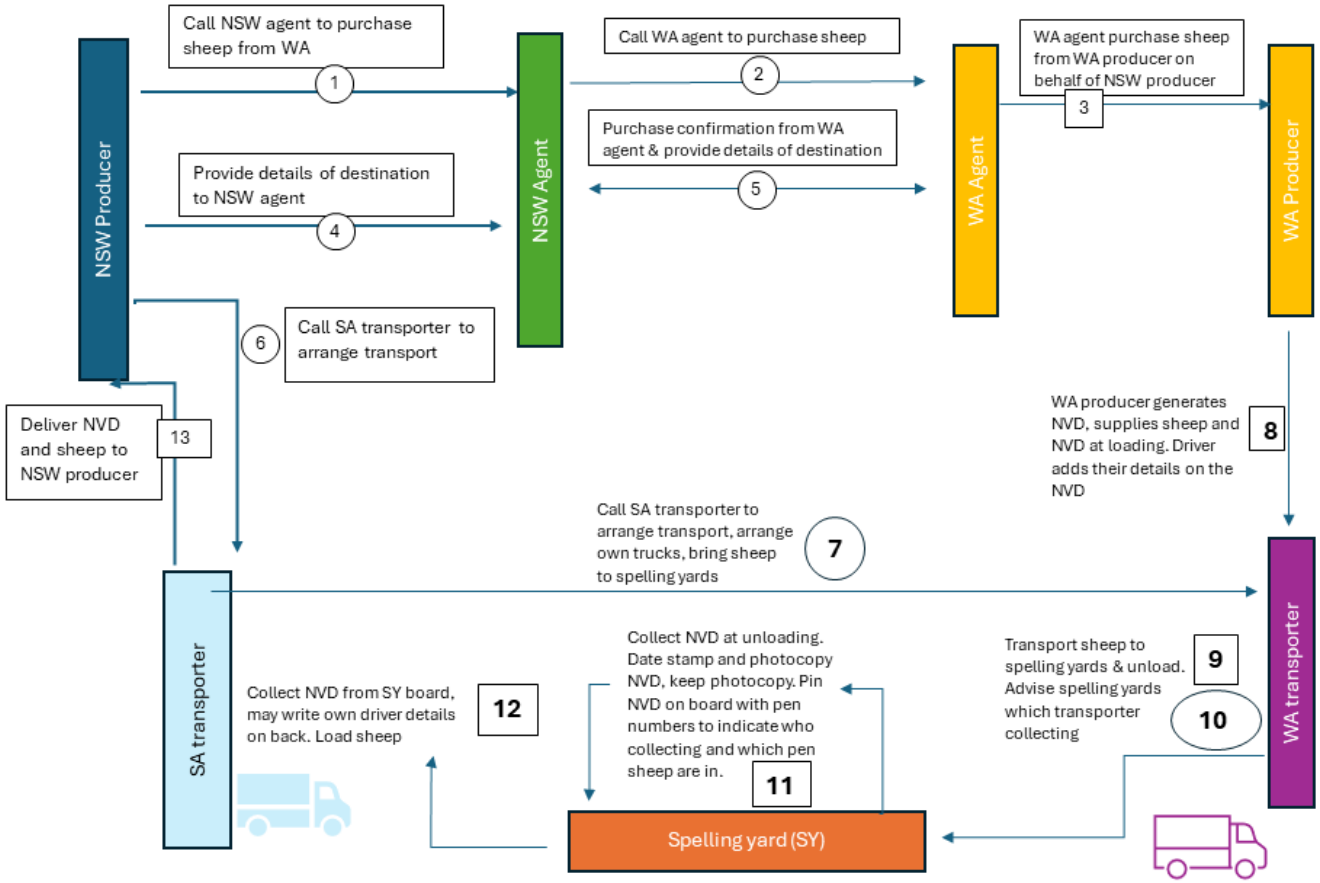
9.3 Transport scenario flowcharts

To assist with mapping the details of processes, four transport scenarios have been developed into flow charts.

Transport scenario: Multiple lines (vendors) in one truck to saleyards



Sheep from WA to NSW via SA spelling yards



Cattle crossing the QLD tick line via Richmond Dip