National Horse Traceability Project

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Acknowledgements

Statement of Confidentiality

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1.1 Key Findings

Option 2 — which incrementally builds on existing traceability arrangements —is the preferred approach to improving the national horse traceability system. Better incident preparedness will be achieved by incrementally enhancing components of the existing horse traceability framework by:

- improving consistency and application of PIC registration

- jurisdictions and industry committing to keeping PIC registers up to date and using PICs on industry registers/databases

- improving the recording of high-risk movements.

A national whole of life traceability system would create significant new costs and compliance and data integrity issues for marginal improvement in tracing efficacy for biosecurity.

- A pre-incident whole of life tracing system is not required to facilitate an effective response to an incursion of the most likely emergency diseases.

- A post-incident whole of life tracing could be needed on a case-by-case basis in limited scenarios.

1.2 Terms of reference and options considered

Marsden Jacob was engaged to undertake a study focusing on the potential role of a horse traceability system in the context of biosecurity, that:

- Describes current arrangements within horse industry sectors and other livestock industries within Australia for identifying and tracking animals.

- Describes overseas models (United Kingdom, European Union, Canada) for tracking horses at a national level, and the objectives and approach of each.

- Assesses the scope and suitability of state Property Identification Code (PIC) registers and industry-based animal identification and/or movement registers.

- Assesses the adequacy of current arrangements for identifying and tracking horses presented for sale or slaughter in Australia.

- Describes potential future options for identifying and tracking horses in Australia for biosecurity purposes and possible timelines, business rules, legal framework, communications plan, technical support options, monitoring and enforcement arrangements, likely stakeholder costs and expected initial and ongoing funding requirements.

  Four reform options were assessed (Table 1).

Table 1 Table of Options

Option 1: Continuation of the status quo

- voluntary microchipping and database registration: mandatory under racing industry rules for Thoroughbreds and Standardbreds only
- PIC coverage for all locations where horses reside
- No national register (beyond above)

Option 2: Building on Option 1 and addressing gaps in the PIC system

- uniform national PIC business rules
- enforcement of PIC legislation
- mandatory recording of high-risk movements from and to PICs
- existing industry managed micro-chip or paper-based tracking
- Industry Registers align with uniform PIC business rules and link to Pet Address
- Industry registers establish authority to release data to government agencies specifically and exclusively for biosecurity and emergency response purposes

Option 3: Unified PIC system with jurisdictional reconciliation of databases including national register linking microchip databases

- Mandatory use of PICs by industry with the recording of movements from and to PICs
- Record location and movement data across animal lifecycle (address inconsistencies and gaps)
- State level paper-based and or electronic system for all horse movements
- National Register linking industry and commercial microchip databases

Option 4: NLIS+ approach for horses (significant step)

- Mandatory microchipping for all horses
- Describes register ownership and system governance arrangements that could potentially be adopted.
- Uniform national PIC business rules
- All movement data is scanned and updated within 24hrs.
- National movement register

1.3 The knowledge base on animal populations and locations is fragmented and inconsistent

There are significant gaps in the knowledge of the scale and location of the national domesticated horse population. At this stage, there is no reliable estimate of the population of horses in Australia.

A commonly accepted order of magnitude estimate is around 1,000,000 domesticated horses in Australia, with estimates varying between 500,000 and 1.4 million.

The challenges with estimating the horse population result from several significant gaps in information. These include:

- non-compliance, enforcement and gaps in recording horses as part of the State/Territory administered Property Identification Code (PIC) system

- no system to record and collate all foaling – foaling is recorded in the racing sector, but there are gaps in other sectors

- many horses are kept as pets, for recreational purposes or as working animals, and are not recorded on registers maintained by any stakeholder organisation

- no system to record or collate all deaths of horses (including by the export slaughtering and pet food processing sectors).

1.4   Traceability systems are fragmented and inconsistent

According to the World Organisation for Animal Health (OIE), the general principle on identification and traceability focuses on several key elements. Figure 1 below outlines a summary of the elements. All these elements exist in a piecemeal and inconsistent fashion across jurisdictions and within the horse industry.

Due to the fragmented nature of existing registers across Australia and the lack of uniformity in the information collected, these elements cannot easily be linked to creating a single national system.

However, for the purposes of the management of emergency animal diseases, there are significant opportunities to address the major gaps at a jurisdictional level by improving aspects of the fragments system – particularly property identification and movement recording.

Figure 1 World Organisation for Animal Health traceability elements
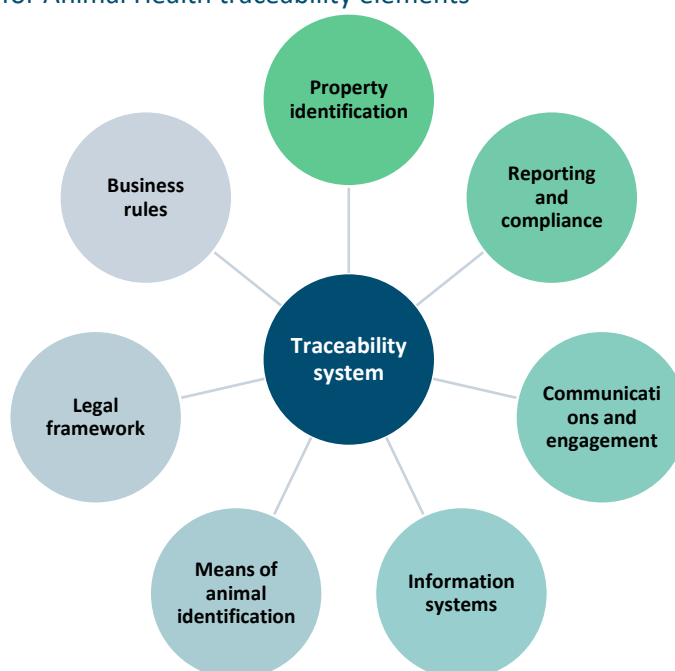
1.5   There are significant opportunities to improve traceability

A whole-of-life tracing system could attempt to address some of the gaps observed at the jurisdictional level, but the magnitude of these gaps is considerable. Importantly, creating a whole of life system for horses is not necessary to address the most serious and likely biosecurity threats.

Significant challenges and costs are anticipated, particularly if the shift is from the current system to a full whole of life system. In particular, in moving to a whole of life system for horses, it would be difficult to manage the challenge of ensuring compliance with recording births, deaths and movements through the life cycle. Gaps in compliance would create data integrity issues and reduced confidence in data quality for biosecurity management. If poor compliance is associated with their administration systems, the horse industry and jurisdictions will face considerable reputational risk.

Examples of issues that could emerge include:

- unrecorded live horse – live horses and new foals that are not known to the system
- ghost horses – horses considered alive according to the system and that are of epidemiological interest during disease outbreaks but that are in fact dead.

Traceability overall is needed to enable an appropriate biosecurity or EAD (emergency animal disease) response to the following serious endemic and exotic diseases:

- African horse sickness (AHS)
- Equine influenza
- Hendra virus

- Vesicular stomatitis.

Tracing is also relevant for horse meat processing, such as knackeries, where the hygienic processing of horse meat for pet food is required. Similarly, abattoirs are required to obtain from vendors complete pre-processing declarations and veterinary chemical exposure information to enable the export of horse meat for human consumption (there are no horses slaughtered in Victoria for human consumption).

Livestock for example, can be susceptible to 'whole of life' diseases (mad cow disease (BSE) and scrapie) therefore require whole-of-life traceability. This includes the recording of PIC-to-PIC movements for susceptible species. A mix of electronic identification devices (EID) and mob-based systems operate for sheep and goats, and the PigPass system operates within the pig industry.

Compared with other livestock industries, whole-of-life horse traceability is significantly more complex because:

- horses move property locations both within and between jurisdictions, much more than cattle,

- horses are traded more frequently than cattle, the vast majority of cattle end up as a meat product – it is not as common for horses to be slaughtered for human consumption or processed by the pet food sector, and

- the deaths of all horses are not recorded, and unlike cattle, it would be problematic to do so.

Additional opportunities to improve the traceability of horses in Australia have been learnt through analysis of international systems. A range of traceability system models currently operate internationally and provide insight into how Australia could improve its current traceability processes. Four key system types were reviewed, including:

- Central database run by a government

- Central database run by a third party

- An integrated model of studbooks linked to a central database

- Property identification for horses and MOU (memorandum of understanding) between government and industry to access data.

A key learning from our analysis is that international traceability systems are specific to their objectives and that a central database is not always necessary. For example, the key aim of the United Kingdom and European Union is to protect the human food chain and ensure that no horses treated with certain drugs are slaughtered for human consumption. Within the EU, humans commonly consume horsemeat, and horses from the UK can end up in the human food chain. Their traceability system is designed to deliver on this objective. Conversely, Canada operates an NLIS (national livestock identification system) style property identification system for the biosecurity, health and welfare of the horse that also supports meat exports to the EU.

Based on the analysis and consultation undertaken, it appears that closing out the system would be hard because there is a lot of unrecorded death (on farms), and because the vast majority of horses

are not processed at end of life at an abattoir or knackery. So, there isn't a strong incentive mechanism for ensuring appropriate compliance.

1.6 An incremental approach is preferred

Better incident preparedness will be achieved by incrementally improving components of the existing horse traceability framework by:

- improving consistency and application of PIC registration

- jurisdictions and industry committing to keeping PIC registers up to date and using PICs on industry registers/databases

- improving the recording of high-risk movements.

Option 2 is preferred as a starting point because it is a relatively lower cost and more effective way of achieving the stated biosecurity objectives, as it will support:

- maturing of the PIC system with uniform business rules and

- maturing of the movement recording system.

It incrementally builds these core components of traceability by being:

- risk-based – target the interventions that address the greatest risks

- aligning to biosecurity objectives – focus on biosecurity threats or EAD's and

- building on existing initiatives and tools.

Other options were not preferred. Business as usual is not sustainable and though change is required, a national whole of life traceability system would create significant new costs and compliance and data integrity issues for marginal improvement in tracing efficacy for biosecurity:

- a pre-incident whole of life tracing system is not required to facilitate an effective response to an incursion of the most likely emergency diseases

- a post-incident whole of life tracing could be needed on a case-by-case basis in limited scenarios.

Option 4 — moving from the current system to a full micro-chipping and national register system would be very high cost and introduce a suite of new challenges and risks. The incentive, funding and compliance challenges that are anticipated would critically undermine successful implementation. This is not to say this solution will not be feasible in the future, rather it is proposed that a deliberately staged process is undertaken that progressively builds up the system and resourcing arrangements. To facilitate movement recording and address biosecurity objectives microchipping only adds value once industry has embraced and commences to use the PIC system for recording movements.

Option 3 — Extending state and national databases was also not preferred at this stage. There was not a strong rationale for extending the scope of databases and recording systems at a state level and aggregating them at a national level. This would create substantial additional costs with little gain in improved traceability for the relevant emergency diseases.

2. Introduction

2.1 Terms of reference

The Terms of Reference for this project require us to focus on the role of a horse traceability system in the context of biosecurity and:

- Describe current arrangements within horse industry sectors and other livestock industries within Australia for identifying and tracking animals.

- Describe overseas models for tracking horses at a national level and the objectives and approach of each.

- Assess the scope and suitability of state Property Identification Code (PIC) registers and industry-based animal identification and/or movement registers.

- Assess the adequacy of current arrangements for identifying and tracking horses presented for sale or slaughter in Australia.

- Describe potential future options for identifying and tracking horses in Australia for biosecurity purposes and possible timelines, business rules, legal framework, communications plan, technical support options, monitoring and enforcement arrangements, likely stakeholder costs and expected initial and on-going funding requirements.

- Describes register ownership and system governance arrangements that could potentially be adopted.

- Address any other related matters that the contractor considers pertinent.

2.2 Traceability for biosecurity

Traceability overall is needed to enable an appropriate biosecurity or EAD (emergency animal disease) response to the following serious endemic and exotic diseases:

- African horse sickness (AHS)

- Equine influenza

- Hendra virus

- Vesicular stomatitis.

Tracing is also relevant for horse meat processing, such as knackeries, where the hygienic processing of horse meat for pet food is required. Similarly, abattoirs are required to receive complete pre-processing declarations and ensure that withholding periods have been observed to enable the export of horse meat for human consumption (there are no horses slaughtered in Victoria for human consumption).

These diseases have been selected based on the likelihood of an incursion and the impact of a serious outbreak on the horse industry, as shown in Table 2.

The key tracing system requirements for the four EADs are:

- horses throughout Australia will be traceable back to properties (PICs) on which they have resided or visited up to 41 days (based on AHS tracing requirements), depending on the disease (traceback)

- horses co-residing with or that have been in contact with horses of interest within the previous 6 months will be locatable within five days (contact tracing).

Effective tracking by authorities to promptly impose preventive measures may shorten the duration of an epidemic, delivering considerable commercial and animal welfare benefits.

In the event of an Emergency Animal Disease (EAD), a response is likely to involve:

- the establishment of an infected area/quarantine zone

- identification of animals within the infected area/quarantine zone or in contact with affected animals for up to the previous six months

- tracking of animals as they move from quarantine to disease-free areas.

The responses to two of the diseases may include whole of life traceability requirements:

- African Horse Sickness – permanent identification (most likely microchipping) of a horse from affected areas for the purpose of regulating future movement within Australia and internationally

- Equine Influenza – permanent identification of horses vaccinated with a genetically modified based vaccine to prevent their slaughter for meat export.

In each case, the permanent whole of life identification with microchipping may be necessary *post-incident* for relevant horses on an incident-by-incident basis. For example, jurisdictions maintained their database records of vaccinated and microchipped horses in 2007 during Equine Influenza.

Table 2 Endemic and exotic disease assumptions

Disease	Likely incursion?	Impact of incursion?	Avenue for incursion?	Interaction with traceability system	Ongoing traceability requirements
African horse sickness	Low	High	• Incursion via insect vectors • Most likely for northern Australia due to proximity to the equatorial region and countries with AHS.	• Traceback and trace-forward within 40 days of the initial case to quickly locate the index case and other exposed horses • Feral horse, donkey and camel populations would need to be included • Horse meat produced from suspected cases would need to be traced	• Permanent identification (most likely microchipping) of a horse from affected areas for the purpose of regulating future movement within Australia and internationally
Equine influenza	Low	High	• Incursion via imported horse	• Traceback and trace-forward initially within past 10 days of the initial case to	• Permanent identification of horses vaccinated with a genetically modified based

Disease	Likely incursion?	Impact of incursion?	Avenue for incursion?	Interaction with traceability system	Ongoing traceability requirements
			• Mechanical spread occurs readily on clothing, harness, veterinary equipment and horse transport vehicles • Insects may act as mechanical spreaders	quickly locate the index case and other exposed horses • Information such as PIC, movements and interaction with events (farrier, brander, IVF etc) • Identification of horse population to assist with vaccine requirements	vaccine to prevent their slaughter for meat export
Vesicular stomatitis	Low	High	• Infection through exposure to saliva and discharge from vesicles • Mechanical spread on clothing, harness, veterinary equipment and horse floats may occur	• Traceback and trace-forward particularly within 21 days of the initial case will be needed to attempt to quickly locate the index case • Extensive testing of susceptible species on nearby properties and neighbouring areas will be needed to assess the extent of the outbreak	• No on going traceability requirements
Hendra virus	• Low • Only reported in Qld and NSW.	High	• Flying foxes are the natural host of Hendra virus • Occasionally the virus spills over from flying foxes to horses.	• The incubation period for Hendra virus in horses ranges **from 5 to 16 days.** There is a risk that horses that have become infected will have moved to other locations before showing clinical signs	• Permanent identification of horses vaccinated against Hendra virus • Horses are to be microchipped, with a horse's vaccination history recorded on a database managed by vaccine manufacturer, Zoetis.

Source: Biosecurity Victoria and AHA AUSVETPLAN

2.3   Foundations of a traceability system for biosecurity

An efficient, effective, and durable traceability system for these biosecurity purposes is fit for purpose and underpinned by a number of foundations, including:

- property identification - a property identification system that identifies locations where horses reside and the names and contact details of carers

- means of animal identification – a system that records the identity of horses and can enable the linking of movements to physical locations

- information system and business rules – the data is recorded and held in a way that enables interrogation of location and movement

- appropriate reporting, compliance, legal frameworks and support – that ensures the tracing information is sufficiently accurate, timely, accessible, authorised and consistent.

We expect that a system built for biosecurity objectives will assist those responding to welfare incidents. This is because:

- traceability for the biosecurity issues of interest in this study requires trace back of 6 months not whole of life

- traceability for biosecurity purposes can be risk-based and more efficient and cost-effective when whole life records are not required. For example, some sectors of the horse industry may be more at risk or a source of risk because of their density of location, and or intensity of movement and level of contact with other horses. Traceback and contact tracing require detailed records of horses attending events with other horses or moving from studs. Whereas trace back and contact tracing may not be relevant for horses not engaged in off location activities. A large segment of the private hobby sector would have low likelihood of movement and where movements do occur, lower risk. Traceback is typically simpler in a disease outbreak than contact tracing; however, contact tracing is generally the key to successfully containing an incursion of an infectious disease.

The key underpinnings of a whole of life traceability system are present, but the scope of their application is not sufficient to achieve whole of life tracing across all horses. A 'fit for purpose' biosecurity focussed traceability system can provide future option value and can provide a lower cost and more effective pathway to achieving whole of life tracing over time. It can also help reduce the risks of inefficient and less effective biosecurity tracing where there is a greater risk of non-compliance and data integrity issues.

2.4   Understanding traceability from a population and risk perspective

There are significant gaps in the knowledge of the scale and location of the national domesticated horse population. At this stage, there is no reliable horse population estimate in Australia. Before any work on a national traceability system can be implemented, work needs to be done to understand the current population better, as this will be the basis for a range of economic analyses required for any resource or funding proposal.

A commonly accepted order of magnitude estimate is around 1,000,000 domesticated horses in Australia, with estimates varying between 500,000 and 1.4 million.

Estimates are derived mainly from industry surveys, registry and competition integrity databases, and intelligence gleaned during emergency animal disease incidents. Some relevant statistics include:

- A 2009 survey of horse owners through the Australian Horse Industry Council estimated the number at approximately 1,000,000. It also concluded most horses are kept on small rural (commonly peri-urban) properties in NSW, Victoria and Queensland.

- The Senate Inquiry on Horse Traceability observed that:

    - Equestrian Australia reported 59,097 registered horses across the equestrian sector.

    - Australian Horse Industry Council's (AHIC) member groups account for 340,000 registered horses.

- The Australian Stud Book has 1.2 million records that include current and historical horses which are likely to include horses that are still alive but that have left the racing industry and horses that are dead.

- The NSW Department of Planning, Industry and Environment (DPIE) informed the committee that in 2018 it was estimated that the state had 97,000 horses, but NSW DPIE considers this figure a massive underestimation.

Assuming the domesticated horse population is 1 million, it is possible to estimate the order of magnitude of births and deaths based on ranges of estimates of life expectancy. For example, using a conservative,[1] average life expectancy of 10 years would suggest approximately 100,000 births and deaths annually if the population of horses is assumed to be stable. A challenge is the life expectancy of horses is likely to vary across breeds.

The challenges with estimating the horse population result from several significant gaps in information. These include:

- non-compliance, lack of requirements and gaps in recording all species present (including horses) as part of Property Identification Codes (PICs). This informs where to start looking for horses and gather population numbers

- no system to record and collate all foaling – foaling is recorded in the racing sector, but there are gaps in other sectors

- no system to record horses kept as pets or for recreational use, or as working horses

- no system to record or collate all deaths of horses (including some aspects of the processing sector).

A whole of life tracing system could attempt to address these gaps, but the magnitude of these gaps is considerable and complicated further by the fact that horses are frequently traded.

Compared with other livestock industries, whole of life horse traceability is significantly more complex because horses move property locations significantly more than cattle and the deaths of all horses are not recorded, and unlike cattle, it would be problematic to do so.

Significant challenges in moving to a whole of life system for horses would be managing the risk of non-compliance with recording births, deaths, and movements through the life cycle. Gaps in compliance would create data integrity issues and reduced confidence in the data quality for biosecurity management.

Gaps in compliance would contribute to issues such as:

- ghost horses – horses considered alive by the system that are in fact dead

- unrecorded live horse – live horses and new foals that are not known to the system.

Tightening the abattoir and knackery arrival data for horses is possible, but these most likely represent a minimal share of all horse deaths. We estimate that 20,000 horses are processed by

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[1] Literature suggests the average life expectancy of a horse is closer to 6 years.

knackeries and abattoirs annually, of which knackeries account for approximately 90 per cent of this figure.

Overall, it suggests the unaccounted population of horse deaths is between 80 to 90 per cent of the horse population. There would be a significant compliance issue to record these deaths where they were not registered with an industry association. It also suggests there is a risk of non-licensed processing of horses for pet meat in some states or a greater role by stock removalists, who particularly in periurban areas remove and cremate or bury dead horses, than currently appreciated.

The second issue is whether the location of live horses can reliably be known at a specific point in time for a large number of the horse population. In a disease outbreak, having access to movement records is the key. These records don't need to be located in a central registry; instead, they need to be created and maintained in electronic or hard copy form by owners, particularly for movements involving high-risk settings, e.g., studs and equestrian event sites. Current data is minimal across most horse sectors simply because there is no requirement to record movement data on the entire horse population.

For example, in the event of a disease incursion, it is possible to triage the horse population at the onset. We estimate the large majority of the horse population, such as those on small landholdings in peri-urban areas, are likely to be held for recreational purposes and as pets. The peri-urban area is where most harness racing and many thoroughbred trainers are located. These industries have some form of movement or horse identification recording and might have sufficient information to inform the early management of a biosecurity incident when supported by property identification.

However, a significant horse population is still unaccounted for and represents a high biosecurity risk, even with industry databases dedicated to horse movements as part of the racing industry. Whilst this subset of the population is covered by industry databases and standards, there are still areas of concern, such as at race meetings, where thoroughbreds and clerks of course horses intermingle. Horses in large numbers also congregate at race tracks every morning for exercise/track work.

2.5　Understanding costs

In this project, we consider the costs of traceability at several different levels:

- costs of the tracing data
  - Costs of establishing the traceability system.
  - Costs of ongoing maintenance of the traceability system - data recording, maintaining data in an accessible format, education and enforcement, governance, and administration.
- cost of undertaking the tracing
- costs of the incidence of disease
  - The cost to industry and the disease impacts and the costs of implementing biosecurity actions – an effective and efficient tracing system can reduce this cost.

- containment and eradication costs are shared between government and industry according to a cost-sharing principles agreed under Emergency Animal Disease Response Agreement (EADRA).

  - EADs are classified in the EADRA agreement into four categories. The cost-sharing arrangements differ for diseases in each category. For example, African horse sickness (AHS) is a Category 3 disease. The Commonwealth and states/territories would collectively be responsible for 50 per cent of the containment and eradication costs associated with the response to an AHS outbreak. Equine influenza is a Category 4 disease, with governments contributing 20 per cent to costs and industry responsible for 80 per cent.

Each of these are influenced by the design of the traceability system and its efficiency and effectiveness.

2.6   Project Objectives

The detailed objective of the tasks assigned to us under the Terms of Reference and our approach to each are summarised in Table 3.

Table 3 Detailed project objectives and approach

Project Objectives
Task 1: Describe current arrangements within horse industry sectors and other livestock industries within Australia for identifying and tracking animals. Utilising the core concepts, we have reviewed the current arrangements within horse industry sectors and other livestock sectors to identify and trace animals. These include: • Racing Australia • Australian Studbook • Harness Racing Australia • Equestrian Australia • Pony Club Australia
Task 2: Describe overseas models for tracking horses at a national level, and the objectives and approach of each. We have reviewed several international models based on their operational design and assessed the systems against the core concepts. The systems reviewed include the Ireland, UK (CED), EU and Canada. For each of these systems, we investigated the following: • Setup and ongoing costs for the system (database, compliance, education/communications). • Compliance regime in place and any industry QA system or coregulatory activities. • Tests conducted on the system to assess the efficiency of data access, and integrity and completeness of data. • Governance arrangements including industry and government access to data. • Drivers for the traceability system in place? • How do these drivers compare with Australia's industry and biosecurity requirements?

Project Objectives

Task 3: Assesses the scope and suitability of state Property Identification Code (PIC) registers and industry-based animal identification and/or movement registers.

As part of this step, we have:

- Summarised the approaches to PIC registers in each jurisdiction.
- Reviewed the outcomes of the description of the animal-based identification and movement systems – noting some 'either or, or both'.
- Assessed their suitability against the criteria of efficacy (i.e., efficient and effective) using a traffic light system.
- Investigated what other data sources or requirements states/territories have concerning horses and horse movements that could benefit this project.
- Evaluated what requirements are in place for microchipping of horses across states and territories.
- Reviewed the compliance requirements and methodology for how compliance checks are undertaken.

Task 4: Assesses the adequacy of current arrangements for identifying and tracking horses presented for sale or slaughter in Australia.

We have provided a summary of the current tracking arrangements for horses for sale and slaughter. This included a review of thoroughbred and breed society tracking systems and how abattoirs record horse slaughter information.

We have assessed the adequacy of the current arrangements in using a range of assessment criteria, including for example:

- scope of horses covered and those not covered
- accuracy of current monitoring and reporting based on the identification and tracking methods used
- level of confidence in data integrity and its auditability.

Task 5: Describe potential future options for identifying and tracking horses in Australia for biosecurity purposes and possible timelines, business rules, legal framework, communications plan, technical support options, monitoring and enforcement arrangements, likely stakeholder costs and expected initial and ongoing funding requirements.

We have described a range of future options for identifying and tracking horses for biosecurity purposes. Each option has focused on:

- Database structure, start-up process including costs, governance arrangements, ongoing costs
- Governance arrangements for data entry, integrity checks, and retrieval or use of data
- Communication and engagement models, compliance programs
- Coregulatory models.

3. Task 1: Industry arrangements in Australia for identifying animals

3.1 Introduction

Task 1 describes current arrangements within horse industry sectors and other livestock industries within Australia to identify and track animals. Utilising the core concepts, we have reviewed the current arrangements within horse industry sectors and other livestock sectors to identify and trace animals.

These include:

- Racing Australia
- Australian Studbook
- Harness Racing Australia
- Equestrian Australia
- Pony Club Australia.

3.2 Approach

We have used a set of evaluation topics to describe the current arrangement within each horse industry where possible, including:

- Context/History
- Objectives/outcomes
- Governance (roles and responsibilities)
- Systems and processes
- Coverage
- Compliance and enforcement
- Costs and benefits of the scheme
- Other implementation challenges
- Connectivity with other sectors.

3.3　A note of electronic registers

Under Victoria's Domestic Animals Act (DAA) Section 63C, animal registry services must hold an animal registry licence. The information collected can only be accessed by specific personnel under the Act and the Terms of Use of the individual registries.

We note there are five licenced electronic registry systems in operation that are relevant to the horse industry. These can

- record microchip data information of pet animals — which can include recreational horses and ponies and repurposed ex-racing industry horses.

- provide a 'look up' service via Pet Address for the racing sector.

There are also two State (New South Wales and South Australia) operated registers, and a registry operated by the greyhound industry, but these only register cats and dogs.

A search engine service is provided through Pet Address that links microchip information across these licenced registries and enables the online search to help establish the owners of lost animals. This is useful where that information is up to date. In addition, these registries typically record ownership, not the name of carers or the location or PIC of the property where a horse is kept.

The registering of ownership changes is typically paper based. With horses in particular, purchasers can have difficulty obtaining the signatures of vendors. This is complicated further by the fact that many horses, particularly former racing thoroughbreds and standardbreds have multiple owners. Fees apply when a registry is asked to change information regarding a horse on its database.

In summary, information held on licenced registries is of limited biosecurity value because ownership details are often out of date, details on the property or PIC of residence of horses is not recorded, and the death of horses is typically not reported by owners or carers. A further issue is that the thoroughbred industry does not participate directly or through a licenced registry in the Pet Address service. Unlike the situation with standardbreds, there is no mechanism for reliably determining that a horse is a thoroughbred, or obtain information about a thoroughbred, through Pet Address.

3.4　Racing Australia & Australian Studbook

3.4.1　Summary Findings

- A central database system that links to each state and territory racing authority enables efficient traceability of horses with frequent interactions with racing and breeding events.

- The extent to which horses are traced is based on four key categories: breeding horse, unnamed horse, named horse and retired horses.

- The longest period any horse, other than those that have left the racing industry, can go without being the subject of any activity with the Australian Stud Book, Racing Australia, or a PRA is 12 months for

breeder horses and 6 months for named and unnamed horses.

- Location-based information is routinely collected for a wide range of industry activities.

3.4.2 Context/History

Racing Australia (RA) is the peak body for Australian thoroughbred breeding and racing consisting of the six State and two Territory racing authorities recognised by the Australian Rules of Racing as Principal Racing Authorities (PRAs). These include:

- Racing NSW

- Racing Victoria

- Racing Queensland

- Racing and Wagering Western Australia

- Racing SA

- Tasracing

- Thoroughbred Racing NT

- Canberra Racing Club.

RA also owns and operates the Australian Stud Book, Racing Australia Equine Genetics Research Centre (RA EGRC —which undertakes genetic testing for RA as well for large number of other horse industry associations), among other subsidiaries; however, these two are key to their traceability system.

RA has documented the location of breeding horses for many years as part of Mare and Stallion Returns. That traceability being when a mare is transported for coving, or a stallion moves to another location to undertake a coving season. In 2014 a rule was written into the Rules of Racing requiring details of when a horse retired, including its location. In 2014 RA brought the Australian Stud Book under its corporate umbrella, allowing for greater transparency on horse patronage, but ownership was still limited up until when an animal leaves the racing industry, i.e. is repurposed. In 2016 foal registration was required to help broaden the information contained on horses who participate in the thoroughbred racing industry and therefore under the RA programs.

RA recently approved the introduction of new rules to improve horse traceability requirements in the Australian Rules of Racing which came into effect on 1 May 2021. The rules are operating in conjunction with additional PRA requirements. RA covers approximately 10-14% of all horses in Australia.

3.4.3 Objectives/outcomes

The purpose of the traceability rules is to enhance and broaden the traceability of horses throughout the period of their life during which the racing industry has jurisdiction over them and relevant

industry participants. It is envisaged that greater transparency with respect to the status and movement of horses will enable racing authorities to better track horses and, consequently, help ensure more positive equine welfare outcomes.

The new traceability rules are separated into 5 divisions for ease of reference:

- Unnamed horses

- Named horses

- Breeding horses

- Access to property

- Breach of traceability rules.

Subscribers to the Australian Stud Book can access data at the level of individual horses, including searching by horse name, Aust ID or microchip number. Data available includes brands, stakes race wins, breeding record/statistics (e.g. who mated with, named offspring, offspring that are stakes winners), whether the horse is alive or has been registered as deceased. The Australian Stud Book also records the breeder and current owner except where retired horses have been repurposed.

3.4.4   Governance (roles and responsibilities)

RA is the national body for thoroughbred racing activities in Australia. State horse racing entities are Principal Racing Authorities (PRA) and are shareholders of RA, each has a stake in the company – Racing Australia Limited. Figure 2**Error! Reference source not found.** outlines the stakeholder breakdown.

Figure 2 Stakeholder breakdown by PRA

Source: Racing Australia Annual Report 2020

RA handle all the business transactions that are undertaken as part of the thoroughbred racing industry and have a role in making and amending the Australian Rules, and together with the PRAs, administer the Rules. RA also operates the Australian Stud Book and make, amend, and administer the Australian Stud Book Rules. They also have or otherwise do all things that it considers to be

conducive to developing, encouraging, promoting, or managing the Australian thoroughbred racing industry.

Under the RA rules, each PRA has the power to control and supervise thoroughbred racing within its State or Territory and at any time exercise any power conferred on Stewards or another person employed, contracted, or approved by a PRA, under the Rules. PRAs may make Local Rules and appoint subcommittees, and delegate to any such subcommittee any of the PRA's powers under the Australian Rules.

Importantly, maintaining compliance with traceability rules is the role and responsibility of the Stewards. Under the updated Australian Rules, Stewards may enter the property of a person in possession of a horse that is registered for racing, breeding, has been retired but still part of RA or is part of a Mare Return. Mare Return means the form required to be lodged with the Australian Stud Book for each broodmare declaring (among other things) the outcome of the broodmare's covering by a stallion or the decision not to have the broodmare covered. In the event of a foal being produced, Stewards may also enter the property (of a licenced person or who is subject to the rules of racing) where the foal is located.

The purpose for entering the property related to observing and/or assessing the health and welfare of the horse, must be where there is a concern for its health and welfare based on reasonable grounds.

Each PRA is also responsible for undertaking audits within its own State and Territory to determine whether the reported number of horses on a property is as notified.

3.4.5 Systems and processes

RA operates an extensive nationwide database system/unified Single National System (SNS) for industry participants (Figure 3). The portal is formally called myhorseracing.horse.

The portal provides the Australian racing industry with the ability to consolidate its many-core technology platforms into one system, as shown below. The portal was enabled to create greater efficiencies, removal of duplications in infrastructure in each State and Territory and provide benefits for industry participants including but not limited to licensing, ownership/horse registration, stakes payments and bonus scheme administration. Stewards and Handicappers along with Racing Departments are amongst key industry stakeholders who will also benefit from access to the portal.

All forms and restrictions for RA can be completed through the portal or via paper-based forms.

Figure 3 Racing Australia database diagram
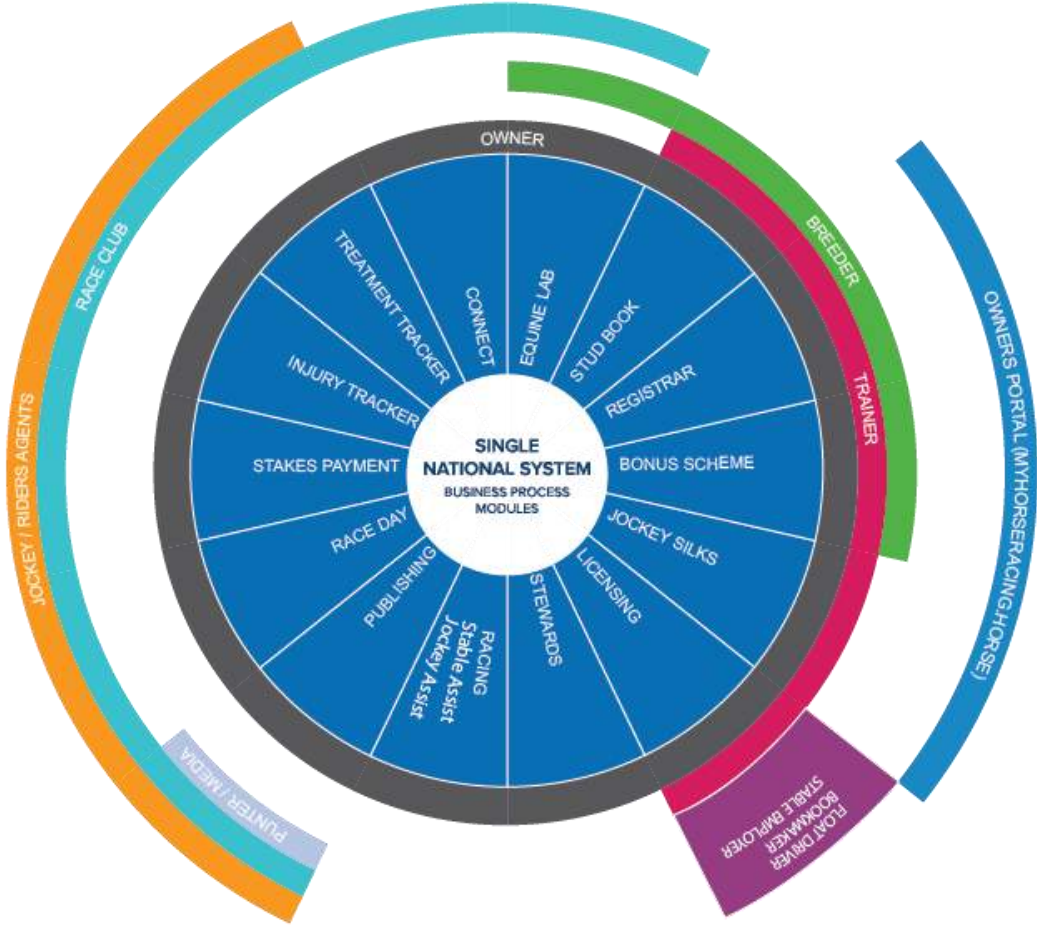
3.4.6 Coverage

The traceability of thoroughbred horses by RA can be separated into 4 divisions:

- Unnamed horses

- Named horses

- Breeding horses

- Retired horses.

The coverage for each of these horses varies based on their activity with the racing industry. All races require every competing RA registered horse present at the meeting to be registered and reported. It is not clear if this included clerks of the course and their horses. There is no coverage for any other animals, including non-thoroughbred horses, kept with thoroughbred horses.

Additional information covered by the RA traceability system includes:

- coverage of horses that go to slaughter is the responsibility of the PRA. In some cases, the PRA has a memorandum of understanding (MOU) with the knackeries to collect information. Participants will report end of life as part of the retired racehorse status update to RA

- there is a gap in the information for sold horses: in the event a horse is sold and goes to another industry such as equestrian. The responsibility for tracing this horse no longer resides with RA

- the RA EGRC undertakes genetic testing for 30 other horse associations include stock horse council, quarter horse etc.

3.4.7 Information collected

Information is collected and stored in the myhorseracing.horse portal. All online activity through this is logged based on a user account. Information can be collected directly in the portal or as uploaded documents. Approximately 30% of forms are still paper-based and completed and either posted or emailed to RA for upload. RA also has a Traceability app for stewards; this enables horses to be identified on track through their microchips.

There are also several additional ways horses are identified, apart from the microchip. Table 4 shows all the identification methods used by RA. The movement of a horse registered with RA is tracked across a range of activities. Table 5 shows where horse location is registered based on each category of horse.

Table 4 Racing Australia methods for identification

Methods for Identification
- Foal Identification Card – age sex, colour, brands or marking   - Horse Registration – Naming   - Thoroughbred Identification Card   - DNA Testing (2003 onwards)   - Microchipping (2003 onwards)   - Branding and Brand registration

Table 5 Racing Australia location-based information

Named Horses	Unnamed Horses	Breeding Horses	Retired Horses
- Horse Registration - Naming - Horse Status Update - Horse Change of Location - Transfer of Ownership - Racehorse - Change of Manager	- Horse Status Update - Horse Change of Location - Transfer of Ownership - Racehorse - Change of Manager - Change of Share Percentage	- Breeding Horse Registration - Names Horse Import Application - New Breeder Registration - Mare/Stallion Return - Horse Status Update	- Retired Horse Update - Retired Horse Identification

Named Horses	Unnamed Horses	Breeding Horses	Retired Horses
• Change of Share Percentage • Retirement/Death Notification - NSW/ACT • Retirement/Death Notification - All States Except NSW/ACT • Imported Horse Application • Duplicate Horse Identification Card	• Retirement/Death Notification - NSW/ACT • Retirement/Death Notification - All States Except NSW/ACT • Imported Horse Application • Duplicate Horse Identification Card	• Horse Change of Location • Transfer of Ownership - Racehorse • Change of Manager • Change of Share Percentage • Retirement/Death Notification - NSW/ACT • Retirement/Death Notification - All States Except NSW/ACT • Imported Horse Application • Duplicate Horse Identification Card	

Initially, the registration and identification of a thoroughbred horse entering RA's jurisdiction are completed through the Foal Identification Card and subsequent Horse Registration (naming). It should be noted that you can register a foal and not name it. A Foal Identification Card (FIC) is produced at the time a horse's parentage is verified, that being when it is registered in the Australian Stud Book.

However, the Foal Identification Card must be relinquished to the Registrar of Racehorses at the time an application for naming is submitted. A new card (Thoroughbred Identification Card) with the horse's name on it will be issued by the Registrar of Racehorses upon naming.

To help identify a horse the following information is collected to update registration:

- Dam and Sire Name and birth date

- Microchip number

- Gender

- Country of foaling and current horse location

- Near side and Offside brand including horse colour and markings.

- DNA testing to determine parentage.

In terms of microchipping, this is required for all foals born in Australia from 2003 onwards and must be done within 2 months of birth. All imported horses born 2003 onwards are required to be microchipped in Australia, if not required in the country of origin.

In terms of branding, all thoroughbred horses in the Australian Stud Book are required to be freeze branded. Freeze branding is optional for imported horses going straight to stud. All foals must be

freeze branded in sufficient time for their brands to be discernible by 31 March of their first year of life. Brands must be clearly visible as permanent white hair markings before horses are microchipped and DNA sampled. The Australian Stud Book is accumulating a database of all registered thoroughbred brands in Australia. Once registered, a Brand Index Card will be issued to the breeder, displaying the brand image, breeder's name and Brand Index Number allocated to the brand registered. The Brand Index Card must be provided to the veterinarian at the time the horse is microchipped, and DNA sampled to enable him/her to enter the correct Brand Index Number on the relevant forms.

Every foal born from 2003 onwards and every broodmare in Australia is required to have a DNA test to determine parentage.

The contact details collected as part of registering a horse depends on the ownership structure. A horse can be registered in the names of up to 20 owner entities. An entity can be a:

- Natural Person

- Registered Syndicate

- Company

- Unincorporated Organisation.

However, as part of registration, a manager must be appointed under the Australian Rules of Racing. Depending on the ownership structure, the manager takes care of the day-to-day decisions of the horse.

The registration of a horse does not explicitly request the details of the horses' carer or PIC of its property of residence. Instead, the contact details for a horse are based on that of the manager/owner, which could be the carer.

The location details of the owner recorded include the street address, suburb, postcode, and State. No PIC is requested. Depending on the type of status update or movement, the carers' information might be collected, such as for a covering, change of location or status update.

3.4.8   Compliance and enforcement

Compliance and audits are undertaken by the PRAs. For example, Racing NSW has an investigation and surveillance unit that work in conjunction with the Racing NSW Stewards panel to assist the Stewards in maintaining the integrity of thoroughbred racing in NSW. The reports are undertaken by a PRA and then reported back to the central RA system.

Through the appointed Stewards, RA has compliance and enforcement rules associated with breaching traceability rules. Anyone participating in the racing industry through a PRA is also required to adhere to the RA rules.

If a horse covered under RA does not provide a status update when required, the horse details are frozen, and they cannot participate in any activity under RA.

3.4.9 Costs and benefits of the scheme

RA is funded through each PRA as stakeholders. RA also receive funds through horse registration and information updates.

The costs of running the traceability scheme include:

- myhorseracing.horse development, and infrastructure costs

- mobile app development and registrations

- collection of information

- compliance and audits by Stewards.

The benefits of running the traceability scheme include:

- improving the welfare of thoroughbred horses

- better tracking of horse activity and interaction with the racing industry.

3.4.10 Other implementation challenges

The key challenge for RA in implementing the new traceability system was understanding the interdependencies between information. The Australian Stud Book, event information, genetics, identification, managers/owners, among other databases, were all brought together under the SNS.

Other key implementation challenges are:

- the process of automating forms and notifications

- ongoing data collection

- managing the expectations of stakeholders.

3.4.11 Connectivity with other sectors

The RA system is fully capable of connecting to other databases. As part of stakeholder interviews, RA noted that they already share information with the Victorian Government through an application programming interface (API). The RA portal has capabilities to connect and share information through external APIs.

3.5 Harness Racing Australia

Key findings

- Updated horse traceability strategy for Horse Racing Australia (HRA) and State bodies will provide for greater awareness and transparency of standardbred horse ownership and location.

- HRA registered data is accessible through a look-up function on the HRA website.

- HRA also has a relationship with a DAA licenced register, PetSafe. A microchip number associated with

a standardbred horse can be entered into Pet Address and through PetSafe, information held on the HRA website can be sourced.

- HRA also uses an alpha-angle freeze branding system to identify foals with a brand that can be easily converted by sight into a unique number and has done so since the 1980s. Freeze branding is likely to be phased out in the near future with microchipping complemented by a signalment key system for recording marking becoming the primary method of identifying animals.

3.5.1 Context/History

Harness Racing Australia (HRA) in conjunction with Racing Information Service Enterprise (RISE) have been developing an online horse traceability function that was launched in HarnessWeb on 28 January 2021. The objective of this system is to improve the identification of standardbred horses in Australia.

The focus on horse traceability has increased for HRA, following many of the recommendations made in several reviews, including the HRA commissioned Parker Report on Traceability in Harness Racing, the QLD Government's Inquiry into Animal Cruelty in the Management of Retired Thoroughbred and Standardbred horses and the Commonwealth Senate Inquiry into The Feasibility of a National Horse Traceability Register for all horses. These reports have demanded a stronger emphasis on 'real time' traceability of horses.

HRA represented more than 48,400 individuals involved in the process of breeding and preparing Standardbreds for racing in Australia. HRA estimate that their database holds approximately 12,000 broodmares, 5,500 mating stallions, 15,000 starter horses, and 12,000. In total, standardbreds constitute about 4-5% of the total horse population in Australia; however, as stated above, the total number of horses is relatively unknown. HRA also estimate that for the period 2020- 21 there were 146 local stallions in 2020-21 plus 54 stallions that serviced mares via imported semen (i.e. 200 in total) 4370 mares were served and 2823 standardbred foals were born. It is reasonable to assume that annual industry data is accurate and database data is accurate up to the point of being repurposed or dying.

3.5.2 Objectives/outcomes

The primary objective for HRA is to trace and accurately identify horses that are part of the harness racing industry. This is undertaken using the data and systems provider Racing Information Service Enterprise (RISE).

HRA's Equine Traceability and Welfare strategy can be broken down into 8 segments:

- A stronger focus on traceability of horses within the industry at all life stages from foaling to yearling stage, breaking in, through to racing and spelling

- Amendments to the Notification of Retired (formerly known as Deregistered) and Deceased procedures and documentation plus shortening the associated timelines related to these events

- Amendments to the HRA Welfare Code of Conduct

- An increase in focus and resourcing at a state level for traceability related work including rule changes as required

- Changes to licensing including introduction of new categories to encompass all participants and compulsory online training modules relevant to the licence category

- The investigation and development of tailored rehoming programs in each state that suit the industry size and demographic

- KPI setting and regular reporting on key industry traceability statistics

- HRA collaborates with government and other equestrian bodies to progress other broader welfare strategies including a national horse registry; transportation; and equine specific destruction standards for knackeries and abattoirs.

3.5.3 Governance (roles and responsibilities)

HRA is the national harness racing body which consists of harness racing Controlling Bodies and Principal Clubs in the states of New South Wales, Queensland, South Australia, Tasmania, Victoria, and Western Australia. All states operate within the various *Racing Acts* of their respective States and the National racing rules to regulate, nurture, foster and promote harness racing at all levels within the industry.

Who is responsible for ensuring:

- information is collected when required

- information is accurate and kept up to date

- event compliance, industry compliance, etc

3.5.4 Systems and processes

All HRA information is collected through RISE. RISE have developed an online process for incorporating a Horse Status Update for owners or trainers to complete regularly within HarnessWeb, which in turn provides real time information about the current status and location of every horse within the industry.

RISE's strategic objective is to enable the harness community to operate to its full potential by partnering with HRA, state bodies and industry participants to provide products and services that allow the day-to-day management of industry processes to be fast, reliable, simple, and accessible.

3.5.5 Coverage

Updates are made in accordance with the Australian Harness Racing Rules (AHRRs), which currently have a particular focus on stable returns and the notification of retired and deceased horses within particular timeframes. In the future, mandatory updates will likely be required regularly for any

change to a horse's circumstances including if it leaves for breaking/pre training or spelling in another location.

There are 11 statuses available to cover the horse's life cycle from young stock to training, racing, spelling, retired and deceased. The differentiation in status will allow an accurate picture for potential future use in race programming to mirror the available horse population.

Other horses and livestock species present at the location at which a horse resides are not collected.

3.5.6   Information collected

HRA collects information across the 13 categories of horses and is stored in HarnessWeb. The methods for identifying horses include:

- Horse Registration
- Microchipping
- Recording of markings via a signalment key system
- Branding and Brand registration
- DNA testing.

All standardbred foals are required to be microchipped except horses already microchipped or horses imported from overseas.

Under Victoria's Domestic Animals Act (DAA) Section 63C, HRA (together with other organisations and individuals) cannot operate an animal registry services unless they hold an animal registry licence.

Location-based information is collected by HRA's information systems as part of the following:

- Registration
- Notification of deregistration or death of a standardbred
- Change of location
- Stable return
- Export clearance/Import registration
- Foal notification
- Breeder/stallion registration.

In most cases, the information will be collected by the controlling bodies in each State and logged using HarnessWeb. HarnessWeb can be linked to external databases through an API.

3.5.7   Compliance and enforcement

All state Integrity Departments will continue to conduct audits on a stable where a comparison is conducted against the horses present at the address and those notified via stable return. Trainers are therefore placed on notice that penalties may be imposed for failing to comply with updated and correct information regarding the lodgement of stable returns.

Stewards also have significant powers to enter upon the premises occupied by or under the control of a licensed person and used in any manner in relation to any license.

3.5.8   Costs and benefits of the scheme

No information is publicly available or provided.

3.5.9   Connectivity with other sectors

HarnessWeb is an online portal that has the capability to be linked to various other databases. At this stage, it is not evident if this information is shared with other horse industry participants.

Horses that are to be sold at a public sale/auction must be deregistered prior to being entered for sale. If a horse is sold without being deregistered, HRA rules dictate that signed Transfer of Ownership papers must be signed to allow the horse to remain as active for racing or breeding purposes in the harness racing industry.

3.6   Equestrian Australia

3.6.1   Context/History

Fédération Equestre Internationale (FEI) is the international body that governs international (FEI) equestrian events around the world. To compete in FEI events, horses must register with the FEI. Recently, the FEI has introduced processes to improve horse identification and traceability at events, when they travel, and throughout their career. The FEI use the information connected with a horse's registration to allow them to compete.

Nationally, the equestrian sector is governed by Equestrian Australia (EA). EA was formed state by state and then became a national governing body in order to enable Australia to participate in the 1956 Olympics. EA adopted a new constitution in 2010. State branches deal with athlete and horse registration and States may have different procedures in place regarding biosecurity plans and record-keeping at events. In part, this is because State based legislation differs (for example, Queensland requires a record of the movement of horses, where other States do not).

The current EA national member database has been in use since 2013/2014.

3.6.2 Objectives/outcomes

EA require member's horses to be registered and assigned to them in order to establish ownership and prove the identification of the horse for competition purposes (this is important because horses are graded). Biosecurity is not the primary purpose driving the collection of this information.

3.6.3 Governance (roles and responsibilities)

The FEI govern international events and require passports for FEI registration.

EA oversee horse registration at an international level. EA issues passports for international EA events.

States oversee national and state events. Members join their state equestrian branch and in doing so become a member of EA. EA and the States have previously agreed the information that members need to enter to register, including horse related information.

Clubs set up organising committees to run events. The organising committee collects information about event participants. If the event is not run using the EA database, EA and the State branch may not have this information.

In Queensland, all event organisers are responsible for having a biosecurity plan available at events and should have a 'Biosecurity Manager' who is responsible for implementing this plan should a biosecurity incident occur.

The person responsible for a horse at an event is also responsible for having accurate identification papers and keeping accurate records for the horse. Event organising committees and EA can inspect these papers.

At international or national events, horses must have passports. At these events horses must be checked by a veterinarian, who will use the passport to identify the horse.

At any event, if a competitor suspects a horse attending the event with another athlete is not the horse registered to do so, they can and do submit a protest.

The EA member database, EA Online, is self-regulated, there is no integrity process (other than those that occur at events, discussed above).

3.6.4 Systems and processes

The EA member database, EA Online, is used for member registration by EA and all State Branches. Horses are required to hold full registration for competition events. Horses and ponies are encouraged to hold at minimum an EA Base Horse registration to take part in official participation activities, events, or competitions and/or closed club activities.

There is no national entry system for state and national events. Multiple event entry systems are used, including Nominate https://nominate.com.au/, Global Entries Online https://www.globalentriesonline.com.au/, ManeHub https://www.manehub.com/, Equipe

https://www.equipe.com/ and many more. These systems all collect different information, they do not conform with one another.

Nominate is linked to EA Online. Events entered via Nominate allow the entry check to see the horse and athlete are registered together with EA. Nominate sends event results to EA Online, so they are recorded on the member database.

Event organisers using other systems are able to do an entry check via the State Office to check the horse and athlete are registered with EA, but this is not enforced and thought not to be common. In addition, if events are not organised through Nominate, a complete record of horse competition and results is not always sent to the State office to upload onto the EA Online system as this can be onerous.

Some club level events may allow day membership for riders to participate. In this case, the rider and horse information will not be accessible on EA Online. However, this is not widespread.

If events are registered with them, the State Office could provide contact details for the organising committee who would have contact details for those who attended the event in a biosecurity event. However, numerous events are not registered with the State Offices, including Riding Club days and clinics.

Endurance has more complete records as they use one system for athlete and horse records, in addition to competition records (Australian Endurance Riders Association).

When there is an FEI class at an event, the organising committee send the entry list to Equestrian Australia who enter these details into the FEI entry system which uses the information the FEI database.

When a horse dies the ID papers may be retained by the owners but must be sent to EA for cancellation. There are no penalties for not updating this information.

When a horse is sold, the owners should notify EA but there are no penalties for not doing so. If the horse is sold to another EA member, the horse will have to be removed from the previous owner's membership and registered to the new owner's membership in order for them to ride it at events (particularly those that use Nominate and are linked with EA Online).

The EA member database can be easily and quickly accessed by EA and State Branches.

3.6.5   Coverage

EA Online includes horses and ponies that its members wish to have registered to them for events. Only information about horses and ponies that participate in events is collected.

EA has 59,097 registered horses (source: feasibility of a national horse traceability sector). Horses may be registered with EA and with other horse sectors. A common example is horses also being registered with the Australian Endurance Riders Association. The databases are not linked.

3.6.6   Information collected

EA Online collects information about the athlete including their contact details, other organisations, EA member number, horse ID for horses they wish to have registered to them, horse details (name, markings, colour, sex, brand, eventing results (through nominate), previous names, registration number, previous horse owner. A horse must be microchipped according to the standard AS 5019/5019 before it can be registered. Horses that were registered before microchips became compulsory may not have a microchip. Members must get a registered vet to fill out and sign the microchip details on the application form before EA can accept it. State branches register the horse and issue registration papers that include a diagram and description of the horse, but this is not saved on the database.

Entry at national events must include the horse passport number, the rider and owner EA member numbers and the horse EA registration (if Australian). There is a vet exam on arrival to establish horse identity, vaccination history, passport details and state of health.

Nominate collect information for events including: the rider's name, address and contact details, EA number, FEI number, Pony club number, Horse name, horse sex, microchip, height, colour, PIC*, property address.

*Equestrian NSW requires owners to identify the PIC at which their horse is kept when entering competitions.

In Queensland event organisers must record and keep the following information for 2 years:

- Where the animal came from and the name and address of the person who delivered the animal

- Where the animal is being moved to and the name and address of the person who received the animal after the event

- Description of the animal

- Date of the event

- When the animal arrived and left

3.6.7   Compliance and enforcement

Event organisers (specifically, the president of the ground jury) may arrange for random inspections of horse identification papers, particularly those that win prize money, to positively identify the horse. If horses can't be positively identified, they must be reported to EA or the relevant State Branch, including the details of the person responsible. Prize money and other rewards are withheld until identification is proven.

3.6.8   Costs and benefits of the scheme

The current EA system of data collection is well accepted and receives few complaints. EA would like to do a lot more in terms of collecting information about horses to improve horse welfare, however

given there is not a lot of money in the sport this is not considered feasible, from both the EA and members perspectives.

3.6.9   Other implementation challenges

The main gaps in horse traceability in relation to the EA database and equestrian events are those State and local club events that are not run on Nominate, although if State Branches were aware of all these events (and they are not) they could provide contact details for the organising committee who should be able to give the details of those who attended. The other gap is if a horse dies or is sold and is not registered with another EA member, the EA system may well not be updated with that information.

3.6.10 Connectivity with other sectors

EA Online data is not shared with other sectors, or even with organising committees. It may be possible to share information in the EA database with governments for biosecurity purposes, subject to privacy constraints.

3.7   Pony Club Australia

3.7.1   Context/History

Pony Club Australia (PCA) is the national governing body of Pony Club in Australia. The first Pony Club began in Australia in 1939. The first meeting of a potential national body was held in 1961. PCA now has over 800 active clubs and over 40,000 members.

PCA and its affiliated Member States and Clubs have agreed to coordinate the collection and reporting of member, horse, and activity information on a common database. The current PCA member system first began to be implemented in 2016. Its use for horse data has gradually increasing since then. The current database is not complete with horse data for all clubs and State, for example, Pony Club South Australia do not record members' horse data in the PCA database. PCA are moving to a new member database system at the end of 2021. All States and clubs will be required to input horse data into the new system in 2022.

3.7.2   Objectives/outcomes

PCA's systems for recording and tracking information about its members' horses are designed to enable PCA to administer Pony Clubs around Australia. The primary purpose of the system is to maintain the integrity of Pony Club competitions. This objective drives the way their systems collect, store and update information about horses. PCA haven't been asked to comply with biosecurity requirements and their current system isn't designed for biosecurity purposes. However, some of the data about members' horses and participation at events that is collected and stored by PCA may be useful for biosecurity purposes.

3.7.3 Governance (roles and responsibilities)

Pony Club Membership

PCA manage the central members database. PCA is responsible for determining the data that members must provide to register for PCA membership, including the information they provide about the horses.

Not all State Pony Clubs require their members to enter horse data on the PCA central database. For example, currently, South Australia does not. As of next year (2022), all States will be required to record members' horse data on the PCA members database.

Members are responsible for entering the correct details (their personal details and those of their horses) when they register to be a PCA member. This information is entered directly into the PCA central database. Members are responsible for updating these details when they change. This information is not formally audited or verified by PCA, States or clubs, although horse identification is verified during events for competition purposes and clubs often verify change of lease documentation. In addition, if a member moved property, they would likely need to change pony clubs and would have to change their address to do so.

PCA, State Pony Clubs and individual clubs can access their members' data on the central database, but no other club or State member's data. The database is stored and maintained by PCA and is not audited.

Pony Club Events

Clubs are responsible for collecting information about the horses that participate in the events that they host: they determine how they collect and store rider and horse information.

Clubs have the incentive to collect accurate information about riders and horse identification in order to ensure the PCA insurance scheme covers their events. If club events do not comply with the national PCA rules and policies, they are not insured.

Host club officials are responsible for verifying horse identity at competitions. This may involve a physical inspection of the horse: events involve physical gear checks; horses are checked at this point.

In addition to complying with PCA guidelines, clubs are responsible for ensuring they and the events they host comply with any State and National requirements. For example, Queensland based clubs are required to have a biosecurity management plan. Compliance is the responsibility of the Queensland Government. Large events in other States are also required to have a biosecurity plan. Local events are required to have risk management plans.

Clubs are not required to record the details of horses that attend unofficial pony club related gatherings, for example, private lessons, attending local agricultural shows, etc.

PCA inspect horses used at Pony Club riding centres to see that the horses are safe and fit for use, but they don't look at the identity of those horses. The riding centre is the owner of a group of

horses. If required to for biosecurity purposes PCA could provide a list of riding schools in a particular area, but for details about the horses involved the riding centres would need to be contacted individually.

3.7.4   Systems and processes

When members register with a Pony Club, the information they enter is stored on Pony Club Australia's central member database. Memberships are renewed each year.

The PCA central database holds data about PCA members, and the horses assigned to them. The PCA rules and database will not allow a horse to be assigned to more than one member.

Some clubs use the PCA event management system to collect and store information about participants at the events they host. The PCA event management system is linked to the PCA member database and requires a horse be assigned to a member in the member database in order to register the horse and rider for an event. When registering for an event, members nominate the horse that they will ride. This horse must be assigned to them in the PCA membership database. A rider is able to borrow a horse for a competition, but the horse must be assigned to the rider profile on the PCA database. For some events, the host club may allow riders to borrow from a pool of horses provided by the host club. These horses are registered to other PCA members – their information is stored in the PCA member database. PCA records are kept and easily retrievable.

Some clubs manage the events they host using third party event management systems, such as 'Event Secretary' or 'Nominate', or their own bespoke system. In this case, riders may bring horses to events that are not assigned to them on the PCA member database. It is up to the club hosting the event (and the third-party event management system they use) to determine what information is collected about horses and their attendance at events/training etc. The club's purpose in collecting this information will be to match the horse and rider: horse identification is important for competitions.

The third-party event management systems and the central PCA member database are not linked. For events not on the PCA event database, PCA don't have information about that event or the horses that attended it – that data is held by the club only. There is no PCA determined rule about how long these records must be kept and they may not all be easily searchable.

PCA are encouraging all clubs to transition to the PCA event management system next year, but this is not a requirement.

Most information is collected electronically. Some clubs may use bespoke offline systems.

Members are not obliged to notify PCA if their horse dies, is sold or their lease expires. They are also not obliged to notify PCA of other horses that they own, ride, or have on their property, unless they wish to have them assigned to them to ride at a PCA event.

The movement of horses is only relevant to PCA and recorded in the database if a horse is sold or leased from one member to another or attends an event run using the PCA event management system.

If a member leases or buys a new horse, in order to be able to ride it at PCA competitions they must assign this horse to their membership on the central PCA database. Members of clubs that do not use PCA event management database may not need to enter the horse details into the PCA member database or have the horse assigned to them on the member database in order to ride the horse at events hosted by that club (for example, events run using a third-party event management system).

Where a member ceases to lease or sells a horse previously assigned to their PCA membership, they are asked to update these details on their membership, but this is not required. If another member applies to assign this horse to their membership, it will automatically be removed from the previous owner's membership (the new owners club may request proof of transfer).

3.7.5   Coverage

Horses that PCA members wish to ride in PCA events are covered in the PCA member database.

However, a significant number of events (at a rough approximation, half) are not managed using the PCA event database. This is expected to change in the next year.

PCA have 25,000 members who all have one or more horse registered.

3.7.6   Information collected

PCA determine what information members provide when they register. Compulsory fields required to assign a horse to a member (i.e. to ride in PCA events) include:

- Official name
- Birth year
- Sex
- Breed
- Colour
- Markings
- Brand
- Discipline (including whether the horse is not active, an ex-racehorse or an ex-pacer/trotter)
- Owner's first and last name.

Optional information includes:

- Stable name
- EA number

- Microchip number (optional and the responsibility of the member via their private vet)

- Inter school number

- Sire and Dam names

- Previous registration details

- PIC number

- Property name and address (while this is optional for horses, members are required to provide their personal address)

- Photos of the horse's markings can also be attached.

Of the information collected about horses, the most important to PCA is the information that identifies the horse. People can send in photos of markings.

PCA do not require clubs collect information about the movement of horses (to and from events).

Note that while a horse's PIC number is not a mandatory field, PCA would like to make it a mandatory field. At the moment this is not considered feasible because, for example, some hobby farms don't have a PIC number. A reasonable education program would be required to make the provision of accurate PIC numbers compulsory.

3.7.7   Compliance and enforcement

Horse purchase and lease data in the PCA member database may be verified. This usually happens at a state level but can be done at the PCA level. No other data in the member database is verified or audited.

If a member was found to have provided incorrect information, this would be most likely to happen in an event (for example, if they won and their details were checked). In this case they may face disciplinary action from the club. There is no system in place for fining members for incorrect information.

The degree of accuracy is unknown but since information requirements are not stringent there is little incentive for Pony Club members to deliberately provide false information. Incomplete information may be common.

3.7.8   Costs and benefits of the scheme

The cost of tracing horses is unknown, since it hasn't been done with this system in place.

3.7.9   Other implementation challenges

Information about many gatherings, such as lessons with a visiting coach, are not officially recorded on the PCA database and are unlikely to be readily accessible if required for a biosecurity incident.

Pony Club members often make general complaints about having to provide information, largely if not having done so is preventing them from being able to enter a horse in a competition.

3.7.10 Connectivity with other sectors

If a horse registered in different sectors is microchipped, data between these sectors can be cross checked. Many horses aren't microchipped, and horses do have the same name, so it is possible one horse that is registered in two different sectors could be mistaken as two different horses.

4. Task 2: Overseas models for tracking horses at a national level

4.1 Introduction

Task 2 seek to describe several overseas models for tracking horses at a national level, and the objectives and approach of each. The systems reviewed include from UK (CED), EU and Canada. For each of these systems, we investigated were possible the following:

- Setup and ongoing costs for the system (database, compliance, education/communications).

- Compliance regime in place and any Industry QA system or coregulatory activities.

- Tests conducted on the system to assess the efficiency of data access, and integrity and completeness of data.

- Governance arrangements including industry and government access to data.

- Drivers for the traceability system in place?

- How do these drivers compare with Australia's industry and biosecurity requirements?

4.2 Horse tracking UK

4.2.1 Drivers for a traceability system and relevance for application in the Australian context

The main drivers for traceability in the UK are protecting and enhancing the trade in pedigree horses, the identification of pedigree (or registered horses), and protecting the human food chain by having a requirement to record the administration of certain veterinary medicines in the passport. Issues arise from a lack of compliance relating to how horses were being categorised, as stricter rules applied to horses for human consumption.

The purpose of horse passports is to protect the human food chain and ensure that no horses treated with certain drugs are slaughtered for human consumption. Within the EU, horsemeat is commonly eaten, and horses from the UK can end up in the human food chain.

The European Union Commission Implemented Regulation (Eu) 2015/262 regarding the identification of equines. As a result, the UK enacted the *Equine Identification (England) (Amendment) (Eu Exit) Regulations 2018.* It is a legal requirement for all horses in England, Wales, and Scotland to be identified. This means that the animal has to be microchipped and passported and will face civil sanctions for those who do not comply.

It is important that the UK complies with the legislation as failure to do so could result in the withdrawal of a number of key equine medicines from sale. Equine identification regulations

encompass horses, ponies, and donkeys. The identification regulations also allow local authorities and the police to track the owners of abandoned, lost or stolen horses to be reunited with their owners more quickly.

In the UK, horse identification documents (horse passports) can be issued by organisations (passport issuing organisations, or PIOs) approved by the Department of Environment, Food and Rural Affairs (DEFRA). Fifty-four horse PIOs manage the studbooks; and 14 organisations do not manage a studbook but are authorised to issue horse passports.

The drivers for the UK do not necessarily apply in the Australian context as we do not consume horse meat; however, we do supply horse meat to the EU for consumption and must comply with their traceability verification requirements.

It is also important to note that the primary purpose of the Central Equine Database (CED) is the identification of horses and not for collecting movement records. It primarily records identification information on Equidae that are kept in the UK.

4.2.2 The Digital Stable - Equine Register

Setup and ongoing costs for the system

The UK meets its EU-mandated requirements for horse traceability through the CED, which holds the core equine identity for the national herd, estimated at around 1.3 million animals with more than 650,000 owners. The particular benefit of the CED is it avoids duplication by allowing approved non-government bodies (PIOs), to provide regular transfers of prescribed data from their databases to the CED. Equine Register Ltd host the UK Central Equine Database (CED) on behalf of Defra, in partnership with CAs for Wales, NI and Scotland.

The Equine Register collections a combination of:

- Genomic and intracytoplasmic sperm injection (ICSI) traceability

- Birth

- Identification – animal and owner/keeper

- Vaccination status

- Food-chain status

- Disease status

- Movements – forwards and historic

- Contracts

- Death.

Based on tender documents obtained from the UK contracts finder website, the awarded contract for the development of the UK CED in 2016 was $1.4million for a two-year contract to develop,

deliver and operate a new central equine database for the UK, which holds statutory data on all horse passports issued by UK Passport Issuing Organisations (PIOs) and horses imported to the UK.

In 2019, the UK Government again procured a contractor for the provision, management, and improvement of the CED at the cost of £1,834,200 (2018) or $3,417.824 (2020 dollars). The CED is run by a third party who has the following responsibilities:

1. Manage the PIOs
   a. Manage PIO succession
   b. Resolve conflicts between PIOs
   c. Reflect CED in Minimum Operating Procedures (MOPS) for PIOs
   d. Encourage PIOs to make full use of the CED, including optional fields, in particular upload owner email and phone details to CED
   e. Act upon PIO non-compliance as seen fit by the UK government
2. Act as a single point of contact for Scotland, Ireland and Wales PIO's
3. Set CED policy and ensure data integrity and security are defined.

Under the current system, it is free to input the mandated information, with additional capability and functionality for a fee. Suppose a horse industry organisation wants to manage events with live cross-checking of veterinarian data to ensure horses are vaccinated and recording results. In that case, this can be done through the digital database and its app.

The fee to update equine details and register it on the CED is £30 or $55 AUD, including a special next-day delivery before 1pm postal service to send the passport back to you. You can pay by bank transfer or by cheque. All passports will be returned to the owner registered in the passport unless otherwise requested.

Compliance regime and industry QA system

As noted above, the primary source of horse information is collected from the passport issuing Organisations (PIOs). The UK Government undertakes compliance of the PIO's against the Minimum operating standards for UK approved passport issuing organisations. The Audit process focuses on:

- keeping clear, accurate and current records in the correct format, and storing, processing, and transmitting personal data securely

- documenting operating procedures and ensuring that all staff understand and follow these procedures

- issuing complete and accurate information about owner responsibilities via the recommended channels

- making appropriate checks to ensure that a passport does not already exist for a particular horse when applications are received

- ensuring that all passports and applications are valid and correct

- issuing properly bound and correctly formatted passports within the deadline

- ensuring that passport updates are clear, correct and properly secured as described in the Minimum

Operating Standards, and that these updates are processed and recorded on the database within set time limits.

For example, owners who do not get their horse microchipped, passported and on the CED could face a fine of up to £200 (around $380 AUD).

Data integrity to assess the efficiency of data access, and integrity and completeness of data

There is little public information on the integrity and or audits of the CED. The contract with the service provider for the CED indicates they are responsible for the data.

Governance arrangements including industry and government access to data

The UK CED is operated by Equine Register on behalf of the Department for Environment, Food & Rural Affairs, in partnership with The Scottish Government, Welsh Government and the Northern Irish Government. Partner governments feed all data into the UK CED and in return, is fed data back on horses where the owners have a relevant partner postcode (Figure 4).

Figure 4 Contributors to UK CED

Source: 5th annual Equine Industry Symposium 2020: Traceability and emergency preparedness

4.3 Horse tracking in Canada

4.3.1 Drivers for a traceability system and relevance for application in the Australian context

Horse tracing appears to have been a contentious issue in Canada, with animal welfare groups supporting an EU-style passport system and sections of the industry opposing it. Where this settled at the moment is that Equestrian Canada (EC), which is the national governing body for equestrian sport and industry, is leading the implementation of a 'national traceability program for the health and welfare of the equine herd in Canada'. The EC is currently in the first (largely planning) phase of a two-phase implementation program.

Overall, there appears to have been considerable debate over the last 10 years about the merits of a horse tracing system. Animal welfare organisations supported an EU-style passport system, while sectors of the industry opposed this on the grounds of cost and impact on horse meat processing.

A private member's bill for a European passport style system for horses was defeated on the votes of the then Conservative Government in 2013.[2] It was also opposed by EC (described as 'the official arm' of the equine industry in Canada) on the grounds that it would place an 'onerous burden' on the Canadian horse industry and end the processing of horses in Canada and the inter-provincial distribution of horse meat in Canada. EC also suggested that an unintended side effect of the introduction could be that Canada could mimic the US experience, where the closure of horse processing facilities had increased neglect and abuse. EC also argued that Canada's *Safe Food for Canadians Act* provided a 'solid legislative framework on which to base Canada's food safety framework'.[3]

In terms of other traceability systems relevant to Australia's situation, Canada has introduced a new Premises Identification (ID) Regulation under their National Animal Health Act. This Premises ID seeks to:

- close information gaps about where farm animals are located on the land

- improve the ability of government agencies and industry to respond quickly to disease and natural disaster emergencies

- improve the chances that livestock and poultry operations can continue operating during emergencies; and

- reduced the change of putting Canada's traceability system at risk.

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[2] https://canadianhorsedefencecoalition.wordpress.com/2014/10/12/canadian-government-does-an-about-face-on-equine-traceability/#:~:text=Canadian%20Government%20Does%20An%20About%2DFace%20On%20Equine%20Traceability,-October%2012%2C%202014&text=The%20official%20tally%20for%20all,141%20of%20the%20nay%20votes.
[3] https://canadianhorsedefencecoalition.files.wordpress.com/2014/04/mergedbrief_part21.pdf

The new regulation will introduce mandatory premises ID registration with the goal of closing information gaps in Canada's premises ID system to enable the jurisdiction and industry to respond more effectively to animal health and environmental emergencies affecting livestock and poultry.

Whilst Australia has a range of national animal identification systems such as the NLIS; there is no nationally organised property identification system.

4.3.2   British Columbia (BC)Premises Identification Program

Premises Identification (ID) is one of the three pillars of the national livestock traceability system, along with animal identification and animal movement recording. An effective livestock traceability system allows Canada's livestock and poultry industries to respond quickly and keep operating during animal disease events. Premises ID also supports fast and accurate responses to non-disease emergencies that threaten livestock, such as floods, forest fires, or environmental contamination events.

The regulation requires registration of premises where animals may be present, temporarily, or permanently, within 30 days of assuming care and/or ownership of the animal(s).

The regulation applies to all premises where animals are kept, assembled, raised, or disposed of, regardless of the number of animals on a given premise (i.e., size of operation, herd or flock size), and irrespective of the reason the animals are kept (type of operation). The information collected includes:

- address, land description with geographic coordinates

- emergency contact details

- premise type

- animal type and maximum capacity for all species that may be on the premises.

The maximum capacity is not the actual number of animals on the premises at a given time. It estimates the highest number of animals of a given species that that premises could reasonably accommodate, enabling emergency responders to understand the scale of an operation.

Upon registration, a premises ID number is assigned to the geographical location where animals are located. This location is identified based on a legal land description, most often by a 9-digit land parcel identification number. Once created, a premises ID number remains permanently with the geographic location and is not transferrable to another geographic location.

Animal owners must provide their premises ID number to access funding and (or) government services or to obtain or renew certain licenses issued by the relevant Agricultural licenced body or other government agencies.

Regulated dairy, beef, sheep, poultry, and pork operations are subject to considerable oversight by industry boards and the Canadian Cattle Identification Agency (CCIA). Regulated industry operations are typically registered with the premises ID program via their respective board rather than directly with the program. The premises ID program has varying levels of access to regulated industry business and contact information.

Memorandum of understandings are in place between the Government and regulated industry boards to enable rapid access to premises ID information during an emergency, individual operations regulated by that industry board do not need to maintain separate accounts with the premises ID program.

4.4 Horse tracking in the EU

4.4.1 Drivers for a traceability system and relevance for application in the Australian context

The number of equine animals or Equidae in the European Union is small, probably not many more than 6 million, compared to hundreds of millions of other livestock. Equidae, and in particular horses, are very mobile and change the establishment of residence more frequently than, for example, cows or pigs. The reoccurrence of major equine infectious diseases could seriously compromise the development of Equidae production, movement between the EU Member States and the development of equestrian sports.

The European food market has been the primary driver for the implementation of traceability registers in the EU. Since February 2005, EU law has mandated that all horses in member states must have a passport for identification and a central database that maintains identification records. These central databases help ensure drug residues are kept out of the food system and to prevent the adulteration of horse meat products.

All Equidae within the EU have to be accompanied by an identification document during their movements (on foot and during transport). The categories of Equidae under the EU regulation include, Equine animals not intended for slaughter, Equine animals intended for slaughter, and Registered equine animals. A passport is issued for the lifetime of the equine animal, and in the case of death or loss of the animal, the passport is returned to the appropriate issuing body within 30 days of the death or loss of the animal. The system of the identification of Equidae in the EU integrates the following elements:

- A single lifetime identification document including a narrative and a diagrammatical description

- A method to ensure an unmistakable link between the identification document and the equine animal (microchip, brands, markings, DNA, and retinal scan)

- Databases maintained by a passport issuing body must record a unique identification number relating to the animal for which an identification document was issued

- A central database where all records are stored and can be accessed.

Central Databases

In terms of the central databases, the UK has Digital Equine Register, which is currently run and managed by an independent service provider. In France, the central database was built in 1975, named SIRE (Identification system indexing Equidae). First created to help horse selection (identification, certification of origins, performance records), the French central database has with the EU Regulation been assigned other missions such as health control and food safety (microchipping of horses, medication records and food chain exclusion, keepers' registration).

The Netherlands uses a pre-existing digital web-based studbook information system. Nearly all the individual horse studbooks in the Netherlands use a digital, web-based Studbook Information System Equis provided by an independent service provider. The Government's Central National Database automatically receives the data from the studbooks. This system is developed, implemented, and controlled by the Government with both solutions using the UELN (Unique Equine Life Number) and Microchip number for identification, registration, and data exchange between the different databases.

Luxembourg has adopted an integrated model where individual studbook systems and databases from seven-horse studbooks (each with their own regulations) were combined with the Luxembourg government's national horse identification and registration database and controlled by an independent service provider.

In both the Luxembourg and Netherlands solutions, rules, datasets, website user interfaces and studbook rules are customised for each studbook. The data in the Central National Database is then provided for access to third parties like slaughterhouses, export offices and veterinarians.

While Australia doesn't require a traceability system to satisfy human health concerns, aspects of the EU could be useful as part of a national traceability system are for example, like Luxembourg, Australian horse industry associates run and manage several horse databases and studbooks.

5. Task 3: Property Identification Code (PIC) registers and industry-based animal registers

5.1 Property Identification Code (PIC)

The National Horse Traceability Working Group recommended Property Identification Codes (PICs) as the primary property identifier for locating horses.

All mainland Australian jurisdictions have mandatory requirements for properties on which horses reside to have a spatial property identifier, known as a property identification code (PIC). Owners of horses in Tasmania are 'highly encouraged to apply for a PIC[4].

PICs form the basis for Australia's food safety and traceability programs; they help identify where animals have come from or are kept and can help locate neighbouring properties so owners can be identified. The need for producers to have a PIC to move animals covered by Australia's NLIS system (such as cows, sheep, goats, and pigs) on and off a property drives producers of these livestock to comply with PIC requirements. However, since horses aren't covered by the NLIS, those drivers don't exist for horse owners and carers, many aren't aware they are required to register for a PIC[5]. Conversations with different horse industries reveals anecdotal evidence that horse owners in Australia don't fully comply with PIC requirements. The level of compliance is unknown and likely to vary between jurisdictions. Ensuring PIC registries are up to date is also a challenge. The existing PIC systems in relation to horses across Australian jurisdictions are insufficient to systematically inform a horse traceability system in their current form.

The National Horse Traceability Working Group identified that access to an accurate register of properties that hold or could hold susceptible species is critically important for traceability in the incidence of a biosecurity outbreak[6].

A horse traceability system would require (at a minimum):

- the geospatial address point at which the horse is kept, and

- the contact details of the relevant people (property owner/manager, animal carer).

The summary report for the third meeting of the National Horse Traceability Working Group outlines the consensus that, at a base level, movement data (pre-disaster) and data on individual horses for emergency management (post-disaster) would be required to manage an exotic disease.

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[4] https://pras.biosecurity.tas.gov.au/pras/ui#fopt
[5] For example, outside of prime production areas in NSW, people are not necessarily aware of the requirement to have a PIC. P5 1.24 The Senate Feasibility of a National Horse Traceability System for All Horses.
[6] Agenda paper 6

Following of a summary of where PICs are currently required across horse industry event types (see Table 6).

Table 6 Summary of PIC by event

Event	Hobby	Pony Club /Equestrian	Racing
Property has a horse	PIC is required but some jurisdictional exceptions	PIC required but some jurisdictional exceptions	PIC is required but some jurisdictional exceptions Industry records address of horse location
Change in property ownership	Required Likely high level of non-compliance	Required	Required Industry recorded address data Likely low levels of non-compliance
Transfer of horse to or from property	Not recorded Queensland requires movement records	Not recorded Queensland requires movement records	Address recorded Queensland requires movement records
Showgrounds	PICS required Queensland requires movement records	PICS required Industry records horse participation in events and location of event but not PIC Queensland requires movement records	PICS required
Racecourse	NA	NA	PICs allocated to Racecourses in Victoria. Industry records movement of a horse to and from the racetrack, although unsure if clerk horses are covered
other	PIC not always allocated to other locations Queensland requires movement records	PIC not always allocated to other locations Queensland requires movement records	NA
Horse services – vet and farrier	PICS not allocated Queensland requires movement records	PICS not allocated Queensland requires movement records	PICS not allocated

Event	Hobby	Pony Club /Equestrian	Racing
Breeding	PICS required in most jurisdictions as classed as property Queensland requires movement records	PICS required in most jurisdictions as classed as property Queensland requires movement records	PICS required in most jurisdictions as classed as property Mixed compliance associated with the recording of locations by industry.
Saleyard's auction	Saleyards required to have PICS Queensland requires movement records	Saleyards required to have PICS Queensland requires movement records	Saleyards required to have PICS
Transport	Not required Queensland requires movement records	Not required Queensland requires movement records	Not required Queensland requires movement records
Birth on PIC	Not recorded	Not recorded	Birth of foals recorded, and address of birth recorded typically within 28 days
Death - Knackery	Required to have PIC Mob based recording of PIC information for compliance with PISC 88 No microchip scanning or reporting	Required to have PIC Mob based recording of PIC information for compliance with PISC 88 No microchip scanning or reporting	Required to have PIC Mob based recording of PIC information for compliance with PISC 88 No microchip scanning or reporting
Death - Euthanised	Not recorded	Not recorded	Death recorded in industry database if reported
Death - Natural	Not recorded	Not recorded	Death recorded in industry database if reported

5.2   Responsible agencies differ across jurisdictions

Different agencies are responsible for allocating a PIC to each livestock-producing property across the different jurisdictions. For example, in NSW Local Land Services and in ACT local government are responsible, while in the Northern Territory the Department of Industry, Tourism and Trade is responsible, and in South Australia, Tasmania, Western Australia, Victoria and Queensland the department's responsible for primary industries/agriculture allocate PICs and maintain their state's PIC register.

Most states and territories require horse numbers to be entered when registering for a PIC but do not require that horses be uniquely identified, except for Western Australia. Different jurisdictions require PICs to be renewed at other times, often every two or three years. Some do not specify renewal times. Horse locations associated with a PIC may change and therefore not be accurate on the PIC register; the instructional video for Victoria states the livestock number entered is required to be indicative only[7].

It is unclear the extent to and speed with which PIC registers could be searched to identify PICs with horses within a specified area, for example, to extract all horse carer contact details in that area. Not all states collect horse carer/manager contact details. Some PIC registers collect both property owner and the property manager or horse carer contact details (ACT, NSW, NT, Vic). In Queensland, owners of horses must register as a biosecurity entity. In doing so they receive a PIC; they don't need to have the property owner's permission to do this. Western Australia also requires the horse owners to register for the PIC (rather than property owners). In South Australia, the property owner's details are collected. If the carer or property manager applies for the PIC their details are collected, but if the property owner applies those details may not be recorded. In Tasmania, property owners apply for the PIC and horse carer details may not be collected.

Saleyards, abattoir, stock and station agents, vet clinics, showgrounds, and areas where horses are present are required to have a PIC in all States.

Some horse industry sectors require PIC information in their member and event registries to different extents. Pony Club Australia collects PIC information however, this is not compulsory. Some Equestrian Australia branches require PIC information, for example, Equestrian New South Wales, while others do not. Racing Australia does not collect PICs as part of their information gathering.

5.2.1   Approach to PIC and PIC registers in each jurisdiction

Table 7 Approach to PIC and PIC registers in each jurisdiction

State or Territory	Who is required to register for a PIC, what information is collected, enforcement	PIC application process and state/territory movement records
ACT	PICs are assigned to the property where stock is held, sold, or sent for sale or slaughter. Property owners and horse owners have the onus to comply with PIC requirements. For example, owners or occupiers of a property that keeps horses, and the carer of the horses are responsible for ensuring the property has a PIC, and the owner of the showground	PIC application is online, via Local Governments. Renewal term unknown. Movement records are voluntary – held by

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[7] https://agriculture.vic.gov.au/farm-management/property-identification-codes/property-identification-codes-pic

State or Territory	Who is required to register for a PIC, what information is collected, enforcement	PIC application process and state/territory movement records
	and the exhibitor at the show are both responsible for ensuring the showground has a PIC. When registering for a PIC the horse numbers are required but horses are not identified. Property owner and property manager details are required. Owner or person in charge of saleyard or abattoir, stock and station agents, and the occupier or manager of an area of public land all need PIC.	individual for 30 days after event.
NSW	Anyone who keeps or owns livestock (regardless of whether the livestock are being moved, traded, agistment, are pets, or reside on the land for other reasons) is required to ensure the land on which livestock is kept (i.e. is present) has a PIC. The occupier of the property and/or the person in charge of the horse must ensure the property has a PIC. Property owner details must be recorded; occupier details are recorded if they make the application. The number of horses is entered. PIC can cover more than one parcel of land if each parcel is used for a common purpose and are adjoining or nearby. Regulatory action may occur in high-risk situations or significant breaches. NSW, Victoria, and Queensland require a PIC to be quoted before health certificates are provided to export horses. Event organisers in NSW are increasingly a PIC be recorded for horses entering an event.	Can apply for PIC in local land service office, by phone or online. Renewed every 3 years. Information should be recorded on paper and include horse identification, although this is voluntary and held by the individual; encourage preservation for 2 years.
NT	Property owners with horses must ensure property has a PIC. The name of the property owner and other contact people including the property manager or tenant are entered together with land details and number of horses. Horse owners should check with property owners to make sure they have a PIC. PIC register contains name and details of property owners (and other contact people), property information and the number of horses.	Apply for PIC with the Department of Industry Tourism and Trade online or via post/email/fax. PIC database can be searched by PIC, address, or property name. Horses must have a PIC for their destination, although not clear anyone has to keep a record of this.

State or Territory	Who is required to register for a PIC, what information is collected, enforcement	PIC application process and state/territory movement records
Qld	Owners/Carers of horses have to register as a biosecurity entity (regardless of whether they own the land) and when they do, they receive a PIC registered to the property. The person keeping the animals needs to register as a biosecurity entity - they don't need landowner permission. Operators of holding facilities including veterinarian clinics, showgrounds or sporting events, local government pound yards, animal refuges, saleyards, clearing dips, abattoirs or slaughterhouses live export and transport depots and stock routes are also required to register as a biosecurity entity (and receive a PIC). In Queensland it is mandatory to provide a PIC in order to enter a horse in an event, together with a description of the animal, when it arrived and left, where it came from and where it went to and the name and address of the person receiving the animal after the event. NSW, Victoria, and Queensland require a PIC to be quoted before health certificates are provided for the export of horses.	PICS must be renewed every 3 years. Movement records that identify the horse (description) and details of the movement must be kept, they are held individually and retained for 2 years. You also need a movement record when receiving animals onto your property. Movement record can be kept in a diary, email, text, excel spreadsheet, etc.
SA	All properties that have a horse must have a PIC. Property owner information is required, and property information along with number of horses. Owner, occupier, owner of stock or carer can register. If carer registers, their details will be recorded but if property owner registers carer details not recorded. Properties that have multiple blocks of land within 100km only need one PIC. Fines exist for not complying with PIC requirements but are likely to be low (if imposed) for horse owners for example e.g. $160 for properties with 20 animals of fewer.	Can apply via post. Can renew online or via post. PIC registry linked to online 'myPIRSA' account. Renewed every 2 years. Movement records are not required when moving off PIC unless to an abattoir for slaughter for human consumption.
Tas	Owners of property with horses are 'strongly encouraged to apply for a PIC'. An owner of a property is considered to be the legal owner, manager, lessee, share farmer, agistee or occupier in control of the property. Information includes applicant details, number and type of animals, property details. Pony clubs, slaughterhouses, showgrounds, etc require a PIC. PIC registration includes selecting what industry horse belongs to (or other).	Urged to make timely updates to PIC if details change. Movement records not required.
Vic	Horse owners must have a PIC. You must have a PIC for the properties on which you graze or keep horses. All livestock	PIC can be applied for by form or online.

State or Territory	Who is required to register for a PIC, what information is collected, enforcement	PIC application process and state/territory movement records
	businesses (saleyards, abattoirs, knackeries, stock agents) must have a PIC.	Movement records are not required
	Applicants must provide contact details. Other livestock owners on the same property may share a PIC or can apply for their own PIC. Property manager contact details must be provided (if not the applicant) and the number of horses. Property owner details should also be added, if not the applicant. Property is identified via a clickable map and address. Enter livestock type and number (number can be an estimate and is meant to be indicative of property only).	
	If parcels of land under common management are in the same LGA they can share the same PIC.	
	PIC must be included in the advertisement when horses are sold (unless sold through an agent).	
WA	It is mandatory for owners of livestock to register, identify stock and obtain a PIC for where livestock is kept. The PIC registration indicates who owns the stock, where they are kept and the number of horses. Individual horses must be identified by 6 months of age in agricultural areas or 18 months elsewhere, or before leaving the property of birth. Horses must be identified with freeze or fire brand listed on PIC or with an approved identifier (may include microchip).	WA register maintained by DPIIRD can be searched for PIC or horse identifiers. Forms must be posted, emailed, or faxed.
	There are no legal requirements for organisers of shows and other meetings specifically for horses and donkeys. It is expected that event managers will keep comprehensive details of attendees and their animals. The event location should have a PIC.	Movement records are voluntary – held by individual.
	Fines up to $20k for possessing horse or donkey not legally identified or trading/moving animals not correctly identified.	Locations receiving animals need a PIC. Movement record required when moved off PIC to an abattoir for slaughter for human consumption.

Sources: p12 Senate committee *Feasibility of a national horse traceability register for all horses* Report

5.3   National Livestock Identification System (NLIS)

The NLIS system is used to identify and trace cattle, sheep, goats, and pigs around Australia for biosecurity, food safety and market access purposes. Agreed National Livestock Traceability Performance Standards (NLTPS) informed in particular by the biosecurity imperatives of needing to quickly contain a foot-and-mouth disease (FMD) or Bovine Spongiform Encephalopathy (BSE)

incursion have been agreed by Ministers. The NLIS systems for each species must meet the KPIs stipulated in the NLTPS. The NLIS is also an important component of Australia's export market access and food safety system.

There are three pillars to the NLIS systems, namely:

- PIC registers maintained by the States/Territories
- Electronic device (EID) registers and database of movements from PIC to PIC maintained by Integrity Systems Company
- National Vendor Declarations incorporating movement details such as FROM PIC, destination/TO PIC, number of head and description, required for all movements with copies in electronic or paper form retained for 7 years by the consignor and the receiver.

The broad operation of movement recording pillar of the NLIS (Cattle) system is outlined in Figure 5. This illustrates the NLIS database should be updated each time there is an animal moved from one property (PIC) to another, or to another party in the supply chain (e.g., saleyard, abattoir).

Figure 5 All movement recording aspects of the NLIS (Cattle) program.
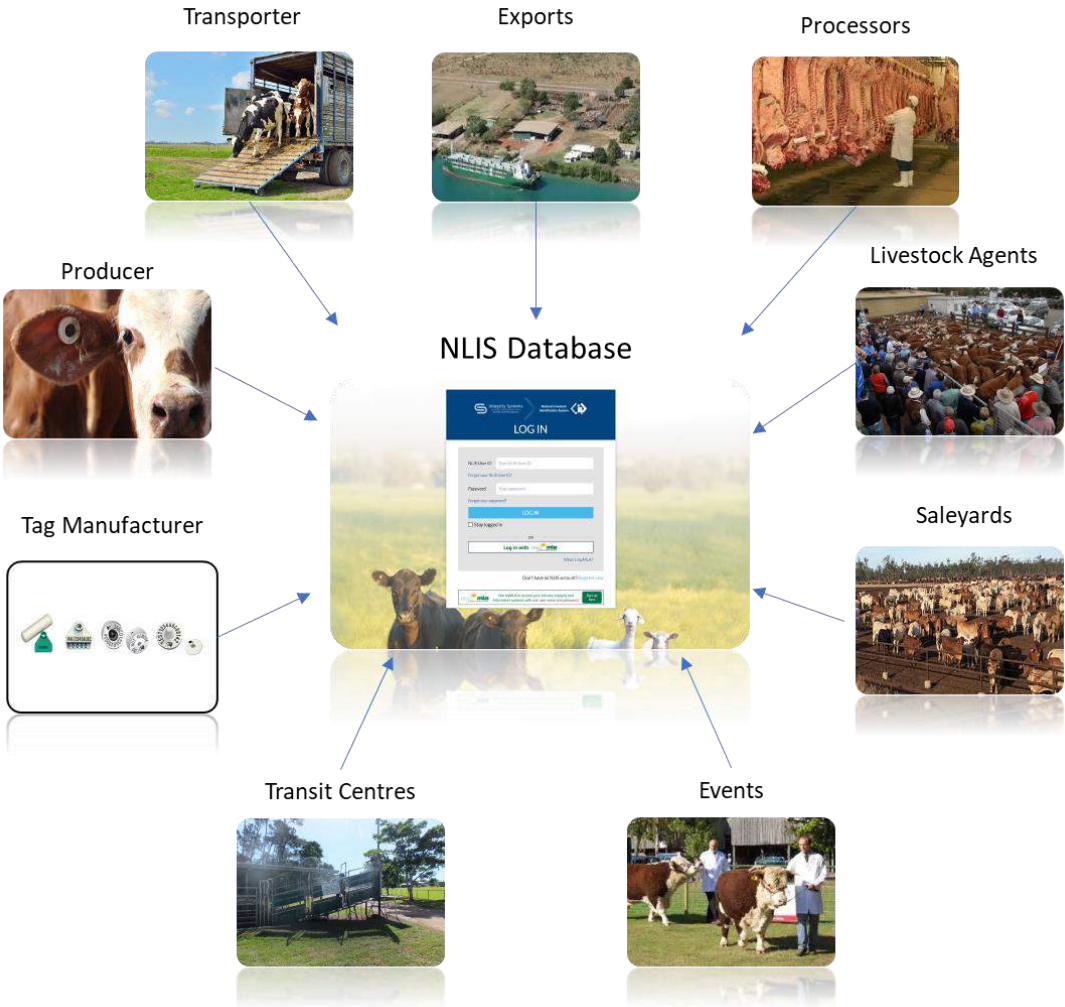
The NLIS is comprised of three components:

- The NLIS for cattle — an electronic, radio frequency identification for all cattle in Australia linked to records of location information from birth to death of each animal.

- The NLIS for sheep and goats — except in Victoria a mob-based identification system linked to records of the origin and movements of animals between locations. Victoria has an electronic ear tag based NLIS (Sheep & Goats) system that was successfully introduced in 2017.

- The NLIS Pigs is Australia's system for identifying and tracing pigs. It is a mob-based system that links pigs with the properties on which they have run.

The history of Australian livestock traceability systems, dates back to the 1960's with a bovine brucellosis and tuberculosis eradication campaign (BTEC) drove the need for improved cattle traceability. Property Identification Codes (PICs) were introduced in 1975. At that time food safety and traceability, a number of residue and food safety-related incidents had impacted market access and led to the development of the NLIS (Cattle) in Victoria.

After its initial introduction in Victoria in 1999, the implementation of the NLIS (Cattle) was progressively adopted by other States. From 2004, the States/Territories began introducing legislation mandated the electronic NLIS tagging of cattle along with movement recording by saleyards, abattoirs, and knackeries. States and territories progressively required cattle movements to be recorded on the NLIS database and since 2006 has been mandatory in all states and territories. The NLIS (Sheep & Goats) was introduced on 1 January 2006. In 2009 a central database for recording mod-based sheep and goat movements was established, with mandatory movement recording phased in for saleyards. The addition of abattoirs, feedlots, live export, goat depots, and property to events recording followed in 2010.

The NLIS for cattle, sheep, goats, and pigs is underpinned by complementary state and territory legislation, which provides the regulatory framework for the system. We note that there are some minor differences in the legislative approach taken which has some impact on the operation of the NLIS.

- Under the NLIS (Cattle) system: when an animal is moved between properties or is slaughtered or exported, a record is entered on the national database.

- Under the NLIS (Sheep & Goats) system: in States other than Victoria when a group of animals is moved between properties or are killed a record is entered on the national database. In Victoria the NLIS (Sheep & Goats) uses electronic tags which need to be scanned with movements then recorded on the NLIS database on an individual animal basis.

In this way, the NLIS provides a national traceability system for all cattle, sheep, goats, and pigs for whole of life to the point after slaughter when the carcase is deemed fit for human consumption. [8]

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[8] Jurisdictions monitor performance of industry against business rule KPIs and are expected to undertake compliance action to ensure integrity of the database.

The Commonwealth Government has no direct responsibility for the NLIS however the Commonwealth relies on the NLIS to underpin export certification. The Commonwealth Government participates through a range of national committees. State governments operate biosecurity arrangements in an aligned manner through agreed protocols, standards, and business rules. Business rules are agreed and codified through the States with State legislation underpinning the system. Livestock Production Assurance (LPA) auditors assist by reviewing NLIS compliance of member producers during random audits. Approximately 2,000 random audits of members are conducted each year by LPA appointed Aus-Meat accredited auditors.

NLIS Challenges

Since its establishment, the NLIS system has evolved significantly and is recognised globally as one of the world's most advanced livestock traceability systems. The performance of the NLIS (Cattle) system is periodically tested against the NLTPS via 'Cowcatcher' simulations/exercises. However, the implementation of the NLIS was not without its challenges (see Table 8).

Table 8 NLIS challenges

System component	Challenge
Staged implementation by state, sector, and species	• There is complexity in communicating requirements to both participants and customers, based on variable implementation timeframes across states and sections. Any project will need to ensure a uniform implementation with minimum time lags.
Different requirements in each jurisdiction	• Ability to achieve national traceability performance standards where state-based exemptions/pathways exist. Standards needs to be uniform across all levels of participation. • State-based requirements needing to be accommodated in a national database, for example in Victoria electronic tagging of sheep is mandatory whereas it is voluntary in other States.
Different requirements across animal species	• Different requirements across species with regards to animal identification methods creates confusion and inconsistent rules. • Accommodating state-based identification of species and methodology of identification such as EID identification.
Communication and education	• Ensuring there is ongoing and sustained investment in education and communication tools to support implementation and business as usual and system upgrades.
Industry turnover	• Education programs need to be ongoing and targeted to ensure turnover within the industry does not lead to compliance issues. All new industry participants need to understand their obligations to ensure the system operates efficiently. • Limited mechanism for regular updates to participants contains details that can lead to communications and engagement with stakeholders.
Compliance and enforcement	• Making sure the roles and responsibilities between the Commonwealth, jurisdictions and industry need to be well defined. • Ensuring that there is sufficient funding for the ongoing compliance and enforcement measures. • Making sure both industry and government support and fund compliance and enforcement measures that discourage compliance.

System component	Challenge
Technology adaption	• Whilst the adoption of digital document submission is increasing, any system will need to ensure it caters for those who require paper-based documents. This can create complexity in the development of any system. • Complexity may arrive when integrating technology with legacy software or hardware systems that is in use by government or industry. New technology needs to present a value proposition beyond compliance.
Value proposition	• Any changes to legislation or process for complying with legislation may not be enough for participants to comply. The value proposition will need to be established across all industry and government participants.
Funding	• It is essential that funding does not erode over time and shift with government or industry policy positions. Funding arrangements need to be established upfront and be able to supports all operational and improvement aspects.

6. Task 4: Assesses the adequacy of current arrangements for identifying and tracking horses

6.1 Introduction

In this section we provide a summary of the current tracking arrangements for horses for sale and slaughter. This included a review of thoroughbred and breed society tracking systems and how abattoirs record horse slaughter information.

We have assessed the adequacy of the current arrangements in using a range of assessment criteria, including for example:

- scope of horses covered and those not covered

- accuracy of current monitoring and reporting based on the identification and tracking methods used

- level of confidence in data integrity and its auditability.

6.2 Slaughter and traceability

6.2.1 Background

The horse slaughter/disposal sector is comprised of:

- Abattoirs – which slaughter horses for human consumption

- Knackeries – which receive dead (or dispatch horses on location before transporting) for processing into pet food and the production of other by-products such as skins and hides and fertiliser. All Abattoirs and Knackeries are required to have PICs, and this is only relevant for tracing some components of the horse slaughtering

- Stock removalists who euthanise livestock, including horses, and remove carcases for burial or cremation.

PIC data for horses slaughtered through Abattoirs is recorded and discussed further in the next section. PIC data is overwhelmingly not recorded by Knackeries that receive horses and this is also discussed further in the section 3.

The provision of accurate traceable kill data in a traceability system is important for several reasons:

- Lifecycle data and the transfer of disease - Inclusion of Abattoirs and Knackeries through the NLIS traceability system completes the lifecycle data and contributes to the data integrity of live livestock records. Accurately recording kill data enables the more rapid and accurate identification of the remaining live livestock at risk in a disease outbreak and also the

reconciliation of traceback and contact tracing data through the processing supply chains – such as saleyards and transport. Given the large numbers of livestock a significant problem in a disease outbreak is inaccuracy in the number of potentially affected and at risk animals within a containment zone. Incomplete and inaccurate kill data can lead to tracing difficulties, additional resources and extra time and effort identifying and dismissing 'ghost animals' recorded as alive on the database. Gaps in accurate recording of slaughter data where animals are uniquely identified, can undermine the integrity of a traceability system, and add significantly to compliance costs.

- Food safety – where animals are slaughtered for human and non-human consumption, kill data that links processed meat to carcasses to source of location can be vital for addressing food safety incidents and demonstrating product integrity and compliance with food safety standards.

Estimates of the number of horses slaughtered annually vary across sources. There is limited reliable and comprehensive data. For example, some reports indicate approximately 2000 horses are slaughtered annually whereas the RSPCA estimate 9000 racehorses are slaughtered annually. There is dispute on the accuracy of these estimates. Racing Australia estimate approximately 1 per cent of ex-racehorses are slaughtered in abattoirs and knackeries annually. This is based on a 2013 survey of trainers that also estimated that:

- 45 per cent of retired racehorses were used for breeding

- 31 per cent were "re-homed" for other purposes

- 14 per cent were sent back to their owner

- 7 per cent had died.

Racing NSW introduced a local rule making it a breach for a trainer, owner, or person in charge or with custody of a racehorse (under the state's jurisdiction), including breeders, to send a horse either directly or indirectly to an abattoir or knackery.

Racing NSW has a range of other policies and procedures designed to reduce the incidence of horses from the industry being sent to slaughter.

There is no reliable way to estimate the numbers of horses sent to knackeries and abattoirs given the current gaps in the traceability of horses in knackeries. The most reliable source of data would be aggregated from jurisdictions responsible for regulating meat processing. Our conversations indicate regulators of Knackeries do not calculate horse slaughtering; however, the regulator of abattoirs that process horse have detailed data on slaughter numbers, but these are not publicly available.

Two abattoirs are licenced to slaughter horses in Australia, and these are:

- Merimist – Caboolture, Queensland
- Samex – Peterborough, South Australia.

Approximately 2,000 tons of horse meat is exported annually from these facilities (Table 9). More than half is exported to Belgium followed by the Russian Federation and Switzerland. Based on these

estimates and that there is little wastage from the processing, we estimate that the number of horses processed annually ranges between 2000 to 3000 per annum. Though this number can vary considerably year to year and over time. For example, we understand that there has been little to no processing of horses by the Peterborough abattoir for the past two years.

Table 9 Tons of Horsemeat exported from Australian annually

Importers	2018 Exported quantity, Tons	2019 Exported quantity, Tons	2020 Exported quantity, Tons
Total	2103	1852	653
Belgium	1367	1069	329
Russian Federation	517	627	265
Switzerland	148	123	53
France	28	22	5

Source: ITC calculations based on ABS data and other sources

6.2.2 Abattoir traceability requirements – EU standards

The slaughtering of horses at abattoirs is regulated by the Commonwealth and licenced by Department of Agriculture Water and Environment (DAWE). This is to ensure minimum market access standards are maintained. In particular export of horse meat to the EU (the major Australian export market requires abattoirs to meet a range of strict operational standards including those relating to traceability).

Horse Vendor Declarations (HVDs) are a key component of meeting minimum EU standards. A HVD sets out the address and PIC (if one has been allocated) of the farm of origin of the horse. A HVD is required for a horse to be processed and is a vendor declaration that the horse has been under the control of the consigner for the previous 6 months. Consigners must have a PIC – it is common for horses under consignment to be accumulated on a property of the consigner before being sent to slaughter as a mob.

The HVD is paper based system that records the number of horses sent by the consigner to the abattoir and by the following identifiers

- colour
- description/sex
- microchip – it is not clear if the microchip number is recorded. Our conversations indicate that the microchip number is commonly not recorded as consigners often do not have scanning technology. Microchip data is manually recorded on the HVD - there is no subsequent recording or updating of the status of the horse on the industry database
- collar number - when the consigner acquires the horse for slaughter the consignor must identify the horse using uniquely numbered identification collars and the number on the collar must link the horse to the HVD. A horse becomes EU ineligible if it loses its identification collar, and an alternative identification management system is not used. Feral horses and brumbies do not require a collar and instead are identified using mob-based descriptions.

In terms of other key traceability data, the HVD also records the date of movement, the vehicle registration number, and the name of the driver.

All domesticated horses consigned to an abattoir for slaughter the horses must have been under the control of the consignor for the last six months or more or have been owned for six months or more by the previous owner.

Processing meat for human consumption requires a range of processing standards to be maintained. Among others this includes traceability of pre slaughter withholding periods to ensure meat is not contaminated with any prohibited drug or chemical.

The audit of HVDs is manual and for the purposes of maintaining the integrity of the market access arrangements. As we understand arrangements, the HVD information is not digitised. No HVD information is shared with other data systems including PIC databases or industry databases.

6.2.3   Knackery traceability requirements – Pet Food Standards

Knackeries are facilities that receive fallen or slaughter live animals for processing into pet meat. It is common for knackeries to receive predeceased animals or kill them prior to transport to the knackery and rare for knackeries to receive live horses and slaughter them on premise. For example, of the 8 knackeries in Victoria only two are licenced to receive and process live animals. There is a strong link between the number and location of knackeries with concentration and location of the dairy industry and historically the horse industry.

All cattle processed by knackeries are recorded in NLIS kill data. Cattle processed by a knackery are identified to a PIC of collection, and this is recorded in kill data and uploaded within 24 hours of the kill to the NLIS database.

Knackeries can play an important role in safely managing the disposal of horses and assist with disease surveillance. Disposing of animals to a licensed knackery with quality control systems in place decreases the risk of disease transmission to other animals and humans. Other advantages include:

- not incurring the cost and inconvenience of digging a deep burial pit – such as not sacrificing valuable agricultural land to burial pits, it can be impractical to dispose of a horse carcass within a small land holding, where they are near residential dwellings or where the water table is close to the surface.

- avoiding the risk of polluting underground water supplies.

There is limited data on the number of knackeries in Australia. Some estimates of the number of licensed Knackeries in Australia vary between 30 and 20. The RSPCA estimated 25 knackeries in Australia. Our conversations with regulators indicated that the vast majority are in New South Wales and Victoria with 10 and 8 knackeries respectively. In NSW four knackeries are licenced to receive horses. There is one regulated Knackery in South Australia and no knackeries in the Northern Territory.

Knackeries are regulated by state and territory governments. This includes licensing of premises and regulating the compliance against the minimum standards and guidelines for processing animals for pet food PISC 88.

Knackeries must comply with PISC 88 food standard for the hygienic processing of pet meat. PISC 88 supersedes the previous standard AS4841:2006 – The Standard for the Hygienic Production of Pet Meat: PISC Technical Report 88 – Amended 2009 was previously published as Australian Standard for the Hygienic Production of Pet Meat AS 4841 (see https://pfiaa.com.au/pet-food-standards/). The standard was developed by the Meat Steering Committee and included regulatory authorities including AQIS, the now FSANZ and state meat processing regulators and industry representatives.

The PISC 88 section 9 requires that Knackeries must have systems in place to facilitate identification of the source of each animal processed. The source of the animal processed is considered to be:

a) the place of production of each animal; or
b) the place or places of production of a consignment of animals; or
c) the saleyard from which an animal or consignment of animals is obtained; or
d) the area from which each animal was captured or killed where animals are captured or killed in the wild.

We note with emphasis, the standard provides for options to identify one of a range of source possibilities. This has practical traceability implications for some species where there are significant deficiencies in animal identification and the provision of supply movement data. In the case of cattle, the data is much more robust because Knackeries are included within the NLIS system and are required to upload kill data within 24 hours to the NLIS database compared to horses where they are not.

Knackeries can only process animals for pet meat if they have complied with their jurisdictional identification requirements.

The knackeries must also have systems in place to enable traceability of a source of an animal through each stage of processing and distribution to enable trace and recall pet meat. Where batching is used to enable traceability, batches must be of a size that facilitate efficient and effective recall of product if required.

The regulation arrangements for this standard are summarised in Table 10. The approach and scope to which jurisdictions enforce compliance against PISC 88 appears to vary. Our conversations indicate that as far as compliance against the traceability requirements under PISC 88 the approach seems similar across Knackeries and jurisdictions. Knackeries record the location and owner from where a horse has been received and the jurisdiction and third-party auditors' audits that the Knackery has recorded the location from which the horse has been received. This is usually the physical address from which the horse has been received. Each Knackery records this information in its own way which varies but appears to usually be via hard copy records and rarely an electronic database. Jurisdictions do not collate or analyse this data except in the case of a biosecurity incident. The PIC is not always available or recorded and the individual identity of the horse is not recorded and nor is it

linked to the location details. Our conversations indicate that in the case of horses, the recording of microchip numbers or brands are also not undertaken.

Knackery horse receival data is not routinely shared or reconciled with other horse industry data or databases. There are no estimates of the number of horses processed by Knackeries annually across jurisdictions.

Knackeries must also inspect and report emergency animal diseases. In some jurisdictions, knackeries are also required to operate under HAACP principles.

Table 10 Regulatory approach to knackery compliance for PISC 88

Jurisdiction	Authority	Licenced/registered	Audited	Enabling legislation and regulations	Standard
New South Wales	Food Safety	Yes	Yes	Food Act 2003 (NSW) NSW food a standard 2015	PISC 88
Victoria	PrimeSafe	Yes	Yes	Meat Industry Act 1993 and Meat Industry regulations 2015 **HACP**	PISC 88
Queensland	Safefood	Yes	Yes - however, Queensland previously stated it would not enforce PICS88 as it conflicted with the legislation	Food Production Safety Act 2000	Food processing regulations as the Act does not distinguish between processing standards for human or pet food.
South Australia	PIRSA	Unclear	Unclear	Primary Produce (Food Safety Schemes) (Meat) Regulations 2017 (South Australia)	PISC 88
Western Australia	Co regulated	Yes (Dept of Health)	Yes (local government and DIPRD)	**TBC**	**TBC**
Tasmania	Biosecurity Tasmania	Yes	Yes	Primary Produce Safety (Pet Food)	PISC 88

Jurisdiction	Authority	Licenced/registered	Audited	Enabling legislation and regulations	Standard
				Regulations 2014 Tasmania	
Northern Territory	NA	NA There are no licenced knackeries	NA	Meat Industries Regulations 2011 (Northern Territory),	**NA**

We note there is also a voluntary compliance arrangement for Knackeries for the safe handling of pet food. All knackeries processing livestock are allocated PICs in all jurisdictions.

6.3   Sales and change of ownership of horse

Traceability of animals may include records held at the industry level of sale and or change of ownership; however, its overall relevance to biosecurity still needs to be tested. Horse ownership is legally complex. Disputes are common. Documents signed by both the seller and purchaser attesting to the sale of a horse would be needed to register a sale including on DAA licensed registries. Most horse movements are not associated with the sale/purchase of a horse, limiting the value of ownership registration for biosecurity purposes.

Sales data that simply record ownership is not a point of trace – it needs to enable a link to location and movement through the supply chain to be purposeful. There are mixed systems in places for horses. Except for racing and breeding thoroughbreds and standardbreds, there are likely to be significant gaps in the recording of horse sales data.

Horse industry records are also likely to be mixed. There are more sound sales data for thoroughbred and standardbred horses within the pool of racing and breeding animals. The reporting that horses have been sold and moved into another sector – the horse is reclassed within the database is now a requirement but data on compliance is not readily available. The new owners of repurposed/retired horses are generally not recorded by racing authorities.

There are likely to be significant gaps in the equestrian and pony clubs' sales data – this is because change in ownership is only relevant where there is change in the recording of what horse is eligible for an event with a rider.

Purchasers of microchipped horses often do not register their purchase on a Pet Address linked database. A 2013 Victorian study of horses at EA and pony club events found that 77% were chipped, but only 54% were registered against the owner on a Pet Address database. Twelve per cent could not be found on any register.

Impediments to registering purchases probably include lack of paperwork listing the microchip number, lack of a microchip reader, lack of seller's signature on transfer forms and/or the fee charged by the register.

6.3.1 Jurisdictional systems – sales and PIC requirements

For the purposes of the NLIS all saleyards must have a PIC. An important issue is whether there are any gaps in the inclusion of saleyards specifically focused on the sale of horses or animals not included under the NLIS. NSW, Victoria, and Queensland require a PIC to be quoted before any health certificates are provided for the export of horses. There are mixed approaches to recording PICs with horse sales.

Victoria

In Victoria 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. A PIC is not required if the sale is through a livestock agent and the agent's name and contact details have been included in the advertisement. There do not seem to be similar requirements in other States.

National Vendor Declarations are required for all movements between PICs involving cattle, sheep, goats, or pigs. Copies of NVD forms in electronic or paper form must be retained by the seller and purchaser for 7 years. The person who has bought or taken possession of such stock (the buyer) must provide the selling agent with the PIC of the property to which the stock is being sent.

Queensland

All saleyard operators are identified under the Queensland *Biosecurity Act 2014* as a registrable biosecurity entity and must comply with the National Livestock Identification System (NLIS) requirements. Registrable biosecurity entities must register with Biosecurity Queensland to be allocated a PIC for livestock traceability purposes. The sale of horses is also covered by a movement record from the saleyard to either the buyer's property or returning to the seller's property.

South Australia

It is not apparent whether a PIC is required for the sale of horses. The PIC register requires certain species (e.g. cattle, sheep, pigs, goats) sold at a public sale or consigned for slaughter to identify the property the animal has come from for disease and residue trace-back purposes.

New South Wales

On arrival of cattle, sheep, goats or pigs at a saleyard, the owner or person in charge of the stock at the time of delivery must provide the selling agent with the delivery information which includes the PIC of the property from which the stock has just been consigned. This may be in the form of a National Vendor Declaration, eDEC, eNVD, PigPass or Transported Stock Statement (TSS). Before any

stock leave a saleyard, the person who has bought or taken possession of the stock (the buyer) must provide the selling agent with the PIC of the property to which the stock is being sent.

Western Australia

Under the WA Biosecurity and Agriculture Management Regulations 2013, it is mandatory to provide appropriate documentation to accompany any horses whenever they leave a property. This includes movements to the vet, showground, breeding centre or event, dead or alive. The documentation must show where the movement commenced and finished, including the property identification code (PIC) of both properties. PICs are required by all livestock owners including saleyards, depots, and abattoirs.

Tasmania

Property owners that have a horse are not required to have a PIC but are recommended to have one. PIC applications are asked to identify the number and type of horses on their property in the PIC application for the property.

Northern Territory

Each time that livestock are bought, sold, or moved from one property (PIC) to another, a livestock movement must be recorded on the NLIS Database in NT. For private sales (i.e. sales and movements that do not take place via a saleyard), the buyer/receiver of the livestock must record the livestock movement onto their property. The information required to record a livestock movement can vary; however, it typically requires:

- List of RFID or EID devices
- NT Waybill number (or NVD)
- Date
- PIC From
- PIC To.

6.3.2 Industry - sales and change of ownership records

The sale of horses within the key industries are well covered and documented, however there are gaps in the sale of horses between industry groups. Voluntary arrangements exists where information can continue to be stored within various databases.

6.3.3 Racing Australia

There are only a relatively small number of auctions houses that sell racing and breeding bloodstock.

Bloodstock auctions can occur:

- online and there is no movement to and from the auction
- at stud venues that have PICs
- auction houses that have their own auction venue

- racetracks that have PICs
- at saleyards that are required to have a PIC.

There are also State based rules on the sale of racing horses. In NSW for example, the equine welfare rules prohibit a thoroughbred that has been domiciled in NSW for the majority of its life to be sold/gifted at a livestock auction that is not approved by Racing NSW. The current approved Livestock Auctions approved are

- Inglis, including Inglis online and bloodstock.com.au
- Magic Millions, including Magic Millions online.
- Bloodstockauction.com.au
- Andrew Wilson & Co (Online).

Stakeholders are advised it is an offence to sell a thoroughbred that has been domiciled in NSW for the majority of its life through any other livestock auction.

For all named horses, a change of location form is required by midnight of the day the horse changes location by the managing owner. Exemptions apply for unnamed horses if the horse is away from its previously notified location:

- for up to 30 days because it is obtaining veterinary treatment: or
- for up to 7 days because it is attending an auction.

Following the sale of a racehorse, within 7 days of the sale, the previous owner must lodge a Named Racehorse Transfer of Ownership online at myhorseracing.horse or via a paper form. Alternatively, if a horse has been purchased, the owner must within 7 days of the purchase or at least 24 hours before your horse is entered for a race or trial (whichever is earlier), lodge a Named Racehorse Transfer of Ownership online at myhorseracing.horse or via a paper form.

RA doesn't record any commercial transactions regarding a horse once it has retired from Racing or Breeding and enters the domestic horse sports market. However, when a horse retires from racing/breeding, the Managing Owner or Trainer is required to supply either via their online accounts or by hard copy, a range of information that includes new carer and the retirement location of the horse.

Once a horse leaves the Racing/Breeding industry and is in the care of a domestic owner who is not considered an industry participant, the new owners may choose to share information with RA. The RA horse database can record that information, and non-industry participants can have a portal account to update the information or submit hard copy forms.

6.3.4   Pony Club and Equestrian

Sales of horses within and to the membership are not specifically recorded.

Changes in ownership between members are recorded for the purposes of grading and participation of a specific horse to a rider in events.

If a horse is sold out of the sector that sale and change of ownership is not recorded.

However, there are some aspects of sales data and change of ownership records that are recorded externally - when a horse from Racing Australia changes status and is first on sold or transferred to the Equestrian or Pony Club sector the new ownership and change of horse status may be recorded on the Racing Australia database.

6.4 Movement of horses and traceability

6.4.1 Movement of horses within a jurisdiction - Waybills and Transport stock statements (TSS)

Waybills in some states are used to track the movement of animals between properties and to abattoirs or knackeries. TSS record stock movements by transport vehicles between properties. These systems identify the property identification code for the departing and arriving location for the horse. The horse is identified by a variety of methods including birth sex markings, brand, or microchip. In some jurisdictions may include the event location the horse is attending.

New South Wales

A TSS is required for a horse travelling by transport in NSW. A TSS record must be kept for two years. A TSS must contain the following minimum information described in Table 11. The TSS is a paper-based system duplicate copy system and was primarily introduced to reduce the incidence of animal theft. An online electronic horse TSS is now available in NSW.

Table 11 TSS minimum requirements NSW

Owner Details	Consignee Details	Stock Details	Driver Details	Vehicle Details
• Owner of stock • Address of owner • Place of loading • Date loaded • Name of Consigner • Address of Consigner	• Name of Consignee • Delivery Address • Address of Consignee	• Type • Sex • Tail Tag/Ear Tag No. • Ear marks • Brands • Number	• Name • Signature • Contact Number	• Registration number • Start Km's • Finish Km's

When horses are transported into and around NSW it is a legal requirement for the person moving horses to carry a TSS unless the horses fall under one of these exemptions:

- horses transported to or from an agricultural show, gymkhana, exhibition, pony club meeting, or similar function conducted by an incorporated club, entity, or association.
- racehorses or harness racing horses, or
- working horses being moved to or from any place for work, or
- horses being moved under a stock permit issued under the Local Land Services Act 2013, or

- horses being moved under a control order, emergency order, biosecurity direction, permit issued, or a biosecurity zone established under the Biosecurity Act 2015, or
- horses being transported from interstate and travel within NSW up to 30 km before proceeding back into the other state or territory as part of an unbroken journey, or
- horses being transported across or along a road from one part of a property to another which would be adjoining except for being separated by the road, or
- horses being transported to a place for treatment by a veterinary practitioner.

One TSS is required for a horse transported to a single destination and returned to the property of origin on the same date. Another TSS is required if a trip includes an overnight stay.

There is little publicly available information on the level of compliance with TSS requirements.

Victoria

There are no PIC recording requirements for horses being moved into and within Victoria. However, PICs are required for health declarations for export.

There are opportunities to improve the consistency of PIC reporting requirements across jurisdictions when transporting horses interstate.

Queensland

Since July 2016 a movement record must be corrected every time, a horse moves off a property. The legislation allows for a range of recording methods provided it captures

- name of the person completing the record
- where the horses/s are being moved from
- where the horses/s are being moved to and the name and address of the person receiving the horse/s
- the date of movement
- description of horse.

If a horse moves onto a property a movement record must be created or take a copy of the record from the departing property. Records are also required for the movement of horses that attended an event. The record must be kept for two years and include:

- date of the event
- when the horse arrived and left the event
- name and address of the person who kept the animal before the event and of the person keeping the animal after the event
- where the animal/s came from
- when the animal/s arrived and left the event
- description of animal/s

Horse health declarations for an event can be sufficient if they meet all the above requirements.

A mobile phone app has been developed for recording movements in a manner that meets the requirements of the Queensland legislation.

South Australia

There are no movement requirements or certification required for horses moving from interstate into South Australia. Any horses affected or suspected of being affected with an EAD can't enter the State unless authorised by the SA Chief Inspector of Stock.

Western Australia

Horses in western Australia are exempt from waybills unless they are being consigned to an abattoir for human consumption

Tasmania

There are no movement record reporting requirements in Tasmania for horses. All properties that run horses must be registered with DPIPWE and have a PIC allocated to buy, sell, and move horses.

Northern Territory

All properties that run horses in the NT must have a PIC allocated. A Property Identification Code (PIC), Brands, Waybills, and the National Livestock Identification System (NLIS) are the four components under the Livestock Act and Regulations that horse owners must comply with for identification and movement purposes. For horses the NT the waybill is included in a NT Health Certificate and Waybill document. Horses entering from Queensland, New South Wales and Western Australia are required to be endorsed by an inspector for the certification of disease-free status. Endorsement is not required from the remaining states.

6.4.2   Movement of horses within a sector

Participants in the racing equestrian and pony club sector must comply with jurisdictional movement recording requirements. There are differing requirements for recording horse movement across jurisdictions, with some exemptions in some jurisdictions for these sectors. Over and above these requirements, each sector can require movement records and/or record data for industry integrity that can be a proxy movement record and complement or supplement jurisdictional data.

A gap in this system are PIC exemptions for horses and that some event locations do not PICs.

6.4.3   Racing Australia

Most movements of horses within the thoroughbred and harness racing industry are actively monitored and recorded into their centralised database. Exemptions exist for veterinary stays and auctions if under seven days. All sales of horses within the thoroughbred and harness racing industries need to lodge a transfer of ownership with seven days of the sale.

RA is in the process of releasing an app that is linked to their database that will allow microchips to be scanned at events by Stewards. This will help ensure the correct identity of the participating horse and updating of records automatically.

All horses attending events have their information recorded as part of a change of location update and stable returns documentation.

All breeding horses similarly are registered and required to submit change of locations and Mare Return or Stallion Return. For a Mare Return, this needs to be lodged, within 30 days if a live foal is produced, by 15 March of that season if your broodmare is not covered during a covering season or within 12 months of when she was last covered if your broodmare is covered but doesn't produce a live foal. For a Stallion Return, this needs to be lodged by 30 June before the upcoming covering season. Stallion owners also have to lodge a declaration of service by the 15th Day of the following month for every month during the covering season. This must be done every month during the covering season, even if your stallion doesn't cover a broodmare in a particular month.

Exemptions on requirements to update location exists for mares and stallions if your horse is away from its usual location for up to 7 days (if being covered or foaling or attending an auction) or up to 30 days (if receiving vet treatment).

6.4.4 Pony Club and Equestrian

Any arena that hosts a horse event like pony club is allocated PICs in all jurisdictions. In NSW and Queensland, providing a PIC to enter a horse in an event is mandatory. We understand other states are increasingly imposing the same requirement. For example, The Pony Club Association of NSW requires declarations of a PIC for entry to most equestrian events event. We also note participation and participation health declaration entry data can be a proxy for movement data. The sector does hold records on which horses participated in specific events and their location. However, there are gaps in this data. For example, not all Pony Clubs use the Pony Club database to record events and sometimes use third-party systems such as Nominate.

7. Task 5: Describe potential future options for identifying and tracking horses in Australia.

7.1 Key finding

Option 2 is the preferred approach to improving the national horse traceability system. Better incident preparedness will be achieved by incrementally enhancing components of the existing horse traceability framework by:

- improving consistency and application of PIC registration

- jurisdictions and industry committing to keeping PIC registers up to date and using PICs on industry registers/databases

- increasing the recording of high-risk movements.

A national whole of life traceability system, Option 4, would create significant new costs and compliance and data integrity issues for marginal improvement in tracing efficacy for biosecurity

- A pre-incident whole of life tracing system is not required to facilitate an effective response to an incursion of the most likely emergency diseases

- A post-incident whole of life tracing could be needed on a case-by-case basis in limited scenarios.

7.2 Assessment of options

We provide four options for identifying and tracking horses in Australia. The options start with business as usual, with no change to the current framework, and escalate in complexity according to the criteria defined below in Table 12.

Table 12 Options assessment framework

Criteria	Description
Means of animal identification	• What are the means for identifying all individual horses, and to what extent do these meet traceability objectives?
Property identification	• What are the means for identifying where individual horses have been and are currently located, and to what extent is this suitable for biosecurity purposes?
Information Systems	• What are the means for capturing horse identification and movement information, and to what level of data integrity does this provide?
Business rules	• What business rules and technical support are required, and to what extent do they exist?

Criteria	Description
Governance and legal frameworks	• What are the governance and legal frameworks, and to what extent do they ensure clear roles and responsibilities, accountability, transparency and durability?
Reporting and compliance	• What are the compliance and audit arrangements, and to what extent are they independent, frequent, effective?
Communication and education	• What are the communication and education requirements, and to what extent can they facilitate compliance across the industry?
Cost	• How much is the Option likely to cost, and to what extent is this a burden?
Efficacy	• To what extent is the Option able to produce the desired biosecurity traceability objective?

Each option is assessed using a traffic framework against the above criteria, shown in Table 13. The traffic light system indicates how the option achieves the above criteria from high, medium, and low. The traffic light evaluation is also reflected in the detailed assessment definitions in the section below.

Table 13 Traffic light framework against the options evaluation criteria

Components	Option 1	Option 2	Option 3	Option 4
Means of animal identification	🟧	🟧	🟧	🟩
Property identification	🟥	🟧	🟩	🟩
Information Systems	🟥	🟧	🟧	🟧
Business rules	🟧	🟩	🟩	🟩
Governance and legal frameworks	🟥	🟧	🟧	🟥
Reporting and compliance	🟧	🟧	🟧	🟥
Communications and engagement	🟧	🟩	🟧	🟥
Cost	🟩	🟩	🟥	🟥
Efficacy of outcomes	🟥	🟩	🟧	🟥

7.3 Defining options

The following section describes potential future options for identifying and tracking horses in Australia for biosecurity purposes. Four options are described below (Table 14) with their associated strengths, governance, costs, and risks.

Table 14 Outline of the Four Options

Option 1: Continuation of the status quo	
• Business as usual arrangements provide sufficient individual animal identification for biosecurity traceability purposes • There exist significant gaps in location data recorded by industry and jurisdictions, and gaps in compliance with reconciling movement databases • Overall, horse traceability arrangements are not effective or efficient for ongoing biosecurity risks	**Strengths** • Low costs and sufficient means of identification **Governance** • No unified governance model covering all horses and providing clear roles and responsibilities, accountability, transparency, and durability **Costs** • Costs are relatively low because system costs have already been sunk • Costs for high-risk industries are ongoing microchipping, compliance, and auditing for those part of racing and sectors that participate in events. **Weaknesses and Risks** • Gaps in identification of location of horses • Insufficient means of identifying and recording horse movements • gaps in compliance with reconciling movement and identification databases • Only covers horses involved in racing or eventing
Option 2: Building on Option 1 and addressing gaps in the PIC system	
• Jurisdictions to administer, strengthen and enforce PIC legislation • Uniform PIC arrangements across jurisdictions and Industry to record PIC details in registers/databases • Mandatory recording of high-risk movements 'from' and 'to' PICs • Existing industry managed micro-chip or paper-based tracking • Industry Registers align with uniform PIC business rules and link to Pet Address • Industry registers establish authority to	**Strengths** • Lowest cost and high additional value **Governance** • Improve oversight of existing commitments • Legislative arrangements may need to be reformed to enable and require information sharing of PIC data for biosecurity **Costs** • Legislative reform • Compliance and enforcement of PICs • Recording of PIC data and incorporation into industry data systems

release data to government agencies specifically and exclusively for biosecurity and emergency response purposes

Weaknesses and Risks

- Relies on existing entities to implement and provide connectivity across systems
- Limited industry tracking

Option 3: Unified PIC system with jurisdictional reconciliation of databases including national register linking microchip databases

- A mix of horse identification methods accommodated
- Mandatory use of PICs by industry and recording of movement from and to PICs
- Record location and movement data across the animal lifecycle (address inconsistencies and gaps)
- State-level paper-based and or electronic system for all horse movements
- National Register linking industry microchip databases

Strengths

- Increase data on movement

Governance

- Substantial new legislative instruments and governance required
- Significant new business rules and standards required

Costs

- Legislative reform
- Costs of linking and maintaining connected databases

Compliance

- Exceeds tracing requirements for EADs

Weaknesses and Risks

- Relies on existing entities to implement and provide connectivity across systems
- Data integrity risks due to gaps in movement data and reporting of deceased animals

Option 4: NLIS+ approach for horses (significant step)

- All horses microchipped
- Mandatory use of PICs by industry All movement data is updated within 48 hrs.
- National database incorporating all microchips and movement data

Strengths

- Potentially enables more detailed data on individual horse movement and location

Governance

- Substantial new legislative instruments and governance required
- Significant new business rules and standards required

Costs

- Far exceeds tracing needs for biosecurity
- Significant implementation and ongoing industry and government costs
- Significant ongoing database, compliance, and enforcement costs

Weaknesses and Risks

- High risk of non-compliance with whole of life recording and subsequent data integrity issues compromising data usefulness for biosecurity

7.3.1 Option 1 assessment – business as usual

Components	Assessment of Option 1
Means of animal identification	**Business as usual arrangements provide sufficient individual animal identification for biosecurity traceability purposes** • Horses involved in racing events are identified for industry integrity. All racing horses have a combination of microchips/EID, DNA, markings, and brands identified for life. • The equestrian industry has a mix of microchips/EID and markings. • Pony Club uses brands and markings predominantly as identifiers, but recordings can be inaccurate due to gaps. • There remain gaps in recording the individual animal identity across jurisdictions for horses on private hobby farms. There is no widespread recording of identification, with minor use of private ID systems.
Property identification	**There exist significant gaps in location data recorded by industry and jurisdictions, and gaps in compliance with reconciling movement databases** • Compliance gaps are substantial for PIC compliance where properties with horses are not required. • The racing sector does not use PIC identifiers as part of its movement records., posing an issue for reconciling movements with PIC locations. • Some jurisdictions require movement documents for interstate and intrastate movements. • The horse industry involves additional events and locations that do not have PICs e.g., local competitions and pony clubs. • Incomplete recording of sale yard PICs. Some jurisdictions require sale information to include a PIC; however, the coverage is low. • In abattoirs, HVDs and electronic tags identify horse mobs to a PIC but not necessarily individual horses. • Knackeries are required to record the location source of horse processed; this does not generally include a PIC. • Recording of natural deaths across all horse industry sectors lack consistent use of PICs.
Information Systems	**Only horses captured by the racing section have adequate databases and the ability to maintain location and identity data. All other industries have significant gaps.** • The racing industry has good location and identity records; however, these have been developed for racing compliance rather than biosecurity and may not include training or exercising locations. • Individual databases for Pony Club and Equestrian are insufficient for biosecurity purposes.

Components	Assessment of Option 1
	• Abattoirs keep records through the HVD system and have sufficient integrity measures for biosecurity purposes. • Individual knackeries keep hard-copy location data that is not centralised but is audited for PISC 88 purposes. • Racing industry records are updated within adequate time periods but not when animals leave the racing and breeding herds and retire. • DAA licensed registries are the sole source of information on a large number of microchipped horses, but this information focuses on ownership and is likely to often be out-of-date.
Business rules	**There is no comprehensive national system of business rules for identifying and locating horses.** • Robust business rules only exist for Abattoirs and Racing industry, with limited business rules for Pony Club and Equestrian horses. • Knackeries rules are unclear, and guidelines are open to interpretation, with gaps for aspects of sale and movement. Stock removalists that collect, bury or cremate carcases are not covered. • There are no overarching business rules that convey the objectives of traceability as a tool for disease control, reducing its effectiveness in the event of an outbreak.
Governance and legal frameworks	**There is no unified governance model covering all horses and providing clear roles and responsibilities, accountability, transparency, and durability.** • The current breath of governance and legal frameworks for horse traceability runs as a decentralised governance model where each industry runs and operates independently. • The racing industry and to a lesser extent, equestrian and pony club sectors, have structured governance and legal frameworks. • Racing Australia and Harness Racing Australia have comprehensive governance and legal frameworks across State and National levels until horses are 'repurposed' and leave their respective industries. • There is no national authorising environment to drive changes across all horse industries and sectors unlike the livestock industry. This causes gaps in roles and responsibilities, reducing the ability to implement traceability functions. • Where horses are not part of the active industry sectors such as racing and events, there is limited public accountability for not following movement and identification requirements.
Reporting and compliance	**There are mixed levels of compliance and auditing regarding the traceability of horses across industry sectors.**

Components	Assessment of Option 1
	• There is a relatively high degree of reporting and compliance through racing integrity systems and jurisdictional stewards. These are, however, related to the integrity of the sport rather than biosecurity traceability. This limits the ability for compliance checks to be aligned with biosecurity requirements. • There are also high compliance and audit activities attributed to the abattoir sector. Again, these are a result of objectives separate from biosecurity as horse meat is used for human (international) and pet food (domestic) requirements. • Limited transparency of compliance and audit outcomes. • Enforcement is strong in racing sector and abattoir but relatively weak elsewhere. • Knackeries are audited in linked with PICS 88 standard, but these are insufficient for biosecurity purposes.
Communications and engagement	**There is mixed engagement on the operation of horse traceability across industries regarding traceability.** • Only the racing industry has high levels of communication and engagement regarding traceability within and outside of the industry. • There are mixed engagement and communications across pony club and equestrian organisations. • Traceability standards for abattoirs and knackeries are regulated by commonwealth and state governments, respectively, reducing the need for communications and engagement. Knackeries, in particular, are only located at two locations in Australia.
Cost	**Given the current scope of operations, costs are relatively low because system costs have already been sunk** • Major costs are ongoing microchipping, compliance, and auditing for those part of racing and sectors that participate in events. • There are limited funding arrangements by Government to improve industry traceability for biosecurity purposes. • Additional monitoring and enforcement by Government would need to be industry-funded.
Efficacy of outcomes	**Overall, horse traceability arrangements are not effective or efficient for ongoing biosecurity risks** • Only the means of identifying horses are sufficient for traceability, but this is the only component of Option 1 that align with the biosecurity objectives. • The location and movement of horses are poor and ineffective for tracing horses as part of diseases outbreaks. • Systems do not target traceability for the purpose of horse biosecurity risks and instead are industry focused. • Operating costs are comparatively low compared to the costs and risk of disease incursions. • Timeliness of the system is poor, and a longer biosecurity response would be required.

Components	Assessment of Option 1
	• Traceability data is generally poor and inaccurate, with an exception for the racing and abattoir sectors. • Current system unlikely to be sustainable given biosecurity risks.

7.3.2 Option 2 assessment

Components	Assessment of Option 2
Means of animal identification	**Business as usual, we do not expect any change as part of Option 2.**
Property identification	**Extending the scope of jurisdiction PICs ensures uniform coverage nationally to improve the ability to identify and locate individual horses.** • The states/territories maintain a uniform property registration system that allocates a Property Identification Code (PIC) to all properties. Movement records will enable 6-month traceback but are not intended for whole of life traceback. • The PIC register will contain information on the species present, contact details for the person responsible for animals and is aligned with property geolocation. • Record keeping for high-risk movement is essential, this includes studs, equestrian events, race meetings, sale yards and abattoirs/knackeries. Records can be maintained on a database, but this is not essential, noting that most high-risk events such as race meetings and equestrian events are currently traced via industry data. • Aligning PICs and horse carers will be essential; ensuring that registers/databases release information in an emergency is essential. • It will be essential to align industry location data with State-based PIC systems. Methods to do this include translation to PIC, adopting PIC codes in movement records, or sharing data through API to State PIC databases. • Issues will remain if the industry continues to adopt non-PIC orientated location.
Information Systems	**Horse industry location data is defined using State and Territory PIC registers aligned using uniform data standards.** • The use of the PIC across all horse industries and events will harmonise data and improve traceability across systems. • Where possible, reconciliation and conversion of location and address data captured by industry PIC format.

Components	Assessment of Option 2
	• Industry managed databases continue to register microchips, brands and markings and receive and store movement records.
Business rules	**Unified business rules that extend across Government and industry to facilitate the sharing of data exclusively for emergency response.** • Industry and DAA registers establish authority to release data to government agencies specifically and exclusively for biosecurity and emergency response purposes. • To help generate data application for biosecurity traceability, information gathering across Industry and Government PIC requirements are aligned. • Industry data recovering will identify appropriate contact information that facilitates effective traceability. • Industry and government agree on standards that outline industry obligations relating to property registration, identification of horses, movement recording and associated data management. • Defined movement recording requirements implemented across PIC and Industry databases.
Governance and legal frameworks	**Standards and associated legal frameworks supported by State and Territory government legislation** • Clear and accountable governance frameworks to be developed in consultation with industry and ongoing support by Government. • Clear roles and responsibilities associated with importing industry data to PIC databases as required. • Industry managed databases continue to be managed independently but allow for access to the history and whereabouts of individual horses or groups of horses and their cohorts, specifically for emergency disease response purposes, on approved registers and databases.
Reporting and compliance	**Documented compliance and audit arrangements across Government and Industry** • Performance monitoring, enforcement, evaluation, and periodic review settings determine through consultation and based on current PIC and NLIS settings. • Government to undertake yearly PIC audit and compliance regime. • Requiring all horse events, including Abattoirs and Knackeries, to PIC information in recording horse location and movement.
Communications and engagement	**An ongoing program to educate current and future horse industry participants about their responsibilities** • A government-led education program with industry participants from racing and equestrian providing guidance internally. • Government to support and communicate to all PIC holders their requirements.

Components	Assessment of Option 2
Cost	**Funding arrangement to be developed and introduced as part of an implementation plan agreed between industry and government stakeholders** • Additional funding will be required to improve the PIC registers and for industry to align databases. • However, this will largely be offset by the biosecurity traceability benefits through the ability to locate horses during a response.
Efficacy of outcomes	**Option 2 provides an improvement on current arrangements that targets key biosecurity traceability requirements and is fit for the purpose** • Information updates are targeted at traceability for horse biosecurity risks, specifically providing horse traceback and contact tracing capabilities. • Timeliness of the system will enable tracing of horses in a comparatively short period of time compared to business as usual. • The system will have appropriate integrity and governance arrangements to facilitate data improvements and information flows • Outcomes are cost-effective given the increased biosecurity benefit gained from using a pre-existing system. • Whilst the means of animal identification does not fully cover all horses, high-risk movements such as those participating in racing and events are sufficiently covered.

7.3.3   Option 3 assessment

Components	Assessment of Option 3
Means of animal identification	**Means of identification aligns with Option 1, business as usual; however, a national database is developed to collect and manage microchips data including ownership and death information.**
Property identification	**Property identification is further expanded from Option 2, requiring all horses and any events horses attend to have a PIC. This is likely to result in compliance issues for low-risk populations, requiring supporting education programs and auditing.**

Components	Assessment of Option 3
	• PIC reforms increase the location recording of properties where horses reside and more detailed information on the recent movement of horses and places visited. Movement records are sufficient for 6-month trace back but are not intended for whole of life traceback. • Industry records can provide whole of life tracing but are not necessary for biosecurity purposes. • PICs applied to all horse events – will require more details being recorded by other racing sectors such as pony club, equestrian, and other horse events. • This option will require reconciliation of interstate movements between jurisdictions. For jurisdictions with limited movement recording, updates will be required to ensure movement records are unified across State and Territories. Movement records like those in Queensland are an example of those required nationally. • This option will require more detailed compliance and auditing to ensure integrity data.
Information Systems	**Key to Option 3 is the development of a national database for animal identification based on movement information systems** • Microchip information is collected and stored on a national database. Each sector and jurisdiction undertake integrity checks, as there is likely to be significant gaps in capabilities in some areas where physical checking of hard copies is needed. • Racing industry records are reconciled with State PIC data. • Equestrian and Pony Club data loaded to a national database and reconciled with PIC data. • Hard or electronic copy records of movement are stored and retrieved in the event of a disease outbreak.
Business rules	**Business rules are established to ensure consistent approaches and methods to data record.** • National standards are developed for recording and sharing of birth, death and movement data between industry and governments. • Industry databases shared with jurisdictions under MOUs or legislation.
Governance and legal frameworks	**Governance and legal frameworks are aligned across jurisdictions but remain the responsibility of each jurisdiction.** • Federal ministerial councils are primary vehicles for resolving inter-jurisdictional issues and could align governance and legal frameworks. The industry could assist in jurisdictional implementation through a co-regulatory model. • Substantial reforms to governance arrangements would be required. New industry and jurisdictional forums are required to resolve database and compliance issues and drive consistency between industry and national databases.

Components	Assessment of Option 3
	• Compliance problems may arise from a conflict of objectives around industry governance frameworks. At present, the industry maintains systems capable of whole of life and welfare management traceability issues. Whilst national databases focus on location and movement for biosecurity purposes. Multiple objectives may impact on participation rates without sufficient transparency. • Clear accountabilities would be required, and any conflicts of interests addressed for industry to undertake self-compliance of private data integrity to the national database.
Reporting and compliance	**Option 3 would require an increase in compliance and auditing due to multiple databases and objectives** • Compliance and auditing by jurisdictions will lead to increased integrity of industry systems to meet biosecurity objectives. • Increased transparency of compliance and audit systems is required. • There are likely gaps in compliance and difficulty enforcing requirements of hobby horse owners who do not attend events and infrequently move around.
Communications and engagement	**Detailed on ongoing communications to explain system and responsibilities and help ensure compliance** • Communication plans required within industries as well as across the systems. • Jurisdictions will need to improve engagement methods with horse owners to ensure all locations where horses reside are registered for a PIC. This is especially the case for jurisdictions where PIC requirements for horses are not as strict.
Cost	**There are high start-up costs to establish jurisdictional databases and systems, with moderate ongoing education and compliance likely requiring funding.** • Moderate ongoing costs to jurisdictions and private sector to maintain integrity of data records, especially movement records. • Issues of how to cost-share industry data collection and management if data is routinely shared with the government but is being collected by industry for other purposes.
Efficacy of outcomes Components	**Option 3 poses a less efficient method of improving horse traceability compared to Option 2. The system is not risk-based and treats all sectors of equal risk across the system.** • The effectiveness of the system is not substantially increased, but the system incurs significantly more management and compliance costs

Components	Assessment of Option 3
	• Jurisdictional databases and recording systems may duplicate industry systems. • Centralised collection and maintenance of paper-based recording systems are beyond the scope required to manage risks of disease outbreak. • Increased availability of data in the centralised system increases the timeliness of response to an outbreak as long as data integrity is maintained. • Moderately improves effectiveness but does not increase effectiveness for movement of high-risk sectors. Gains would occur through better documentation of movement in private hobby and club sector. • Limited improvements in accuracy for the purpose of biosecurity compared to Option 2.

7.3.4 Option 4 assessment

Components	Assessment of Option 4
Means of animal identification	**Option 4 involves all horses requiring a microchips/EID device for means of identification. This is currently over and above the requirements to meet biosecurity objectives.** • Microchip data would be uploaded to a national tracking system, leading to duplicate industry and private microchip recording databases. • Commercial registers hold most of the microchip information; however, there is low data integrity due to a lack of updates. Due to commercial incentives, current microchip providers may be unwilling to provide or connect their databases to a national system. • To ensure all horses can be microchipped, there would need to be an increase in the number of approved microchip installers. Changes would need to occur at a jurisdiction level to permit and train other installers. • Higher levels of microchipping will increase compliance and audit costs for horse-related events, movement and end of life recording under this Option. • This option exceeds requirements for biosecurity tracing and provides foundations for whole of life tracing instead. • Likely to be significant non-compliance in the hobby sector with microchipping due to costs.

Components	Assessment of Option 4
Property identification	**Building on Option 3 and requiring all horses and any events horses attend to have a PIC. Option 4 would but all movement information onto a national database and in electronic form.** • Electronic movement records would be stored on an accessible database required under national rules – likely high non-compliance in hobby sector and exceeds requirements for biosecurity purposes. • PIC reforms increase the recording of location of properties where horses reside and more detailed information on the recent movement of horses. Movement records are sufficient for 6-month trace back but are not intended for whole of life traceback. • To facilitate tracing, records held by managers/carers can be stored 'on site' in paper or electronic format. Records should only need to be kept for high-risk movements. • The use of accessible databases for movement recording purposes would be advantageous but not essential for biosecurity purposes. • PICs applied to all horse events – will require more details being recorded by all horse events such as Pony club and Equestrian. • Will require more detailed compliance and auditing to ensure data integrity. • Likely to be significant non-compliance with recording of birth and death data to PIC that will create significant data integrity issues in case of disease outbreak.
Information Systems	**In addition to Option 3, a national database will record movement and identification information.** • Electronic scanned movements records stored in a national database and retrieved in event of disease outbreak. • Similar issues to Option 3 will result in potential duplication with industry and private microchip recording databases. Racing industry records are likely to be linked to a national database through an API or similar digital protocol.
Business rules	**As with Option 3, business rules are established to ensure consistent approaches and methods to data recording.** • Detailed business rules required for collection and maintenance of data. Industry databases shared with jurisdictions under MOUs or legislation. • Industry data shared under MOUs or legislation – risks of conflicts of interest with data sharing as differing objectives between systems. • National standards are developed for recording and sharing birth, death and movement data between industry and governments.

Components	Assessment of Option 4
Governance and legal frameworks	**Governance and legal frameworks are aligned across jurisdictions but remain the responsibility of each jurisdiction.** • Federal ministerial councils are primary vehicles for resolving inter-jurisdictional issues and could align governance and legal frameworks. The industry could assist in jurisdictional implementation through a co-regulatory model. • New industry and jurisdictional forums are required to resolve database and compliance issues and drive consistency between industry and national databases. • Compliance problems may arise from a conflict of objectives around industry governance frameworks. At present, the industry maintains systems capable of whole of life and welfare management traceability issues. Whilst national databases focus on location and movement for biosecurity purposes. Multiple objectives may impact on participation rates without sufficient transparency. • Clear accountabilities would be required, and any conflicts of interests addressed for industry to undertake self-compliance of private data integrity to the national database.
Reporting and compliance	**Option 4 would require an increase in compliance and auditing due to multiple databases and objectives** • Compliance and auditing by jurisdictions will lead to increased integrity of industry systems to meet biosecurity objectives. • Increased transparency of compliance and audit systems is required. • There are likely gaps in compliance and difficulty enforcing requirements of hobby horse owners who do not attend events and infrequently move around. This could result in significant data integrity issues with the ghost horse (population increasing from non-compliance.
Communications and engagement	**Detailed on ongoing communications to explain system and responsibilities and help ensure compliance** • Communication plans required within industries as well as across both microchip and movements systems. An additional step from Option 3 requiring a greater commitment to ensure integrity and reduce compliance risks. • Jurisdictions will need to improve engagement methods with horse owners to ensure all locations where horses reside are registered for a PIC. This is especially the case for jurisdictions where PIC requirements for horses are not as strict.
Cost	**There are high start-up costs to establish jurisdictional databases and systems, with moderate ongoing education and compliance likely requiring funding.** • Option 4 would involve high ongoing costs to jurisdictions and the private sector to maintain the integrity of data records for identification and movement.

Components	Assessment of Option 4
	• Issues of how to cost-share industry data collection and management if data is routinely shared with the government but is being collected by industry for other purposes.
Efficacy of outcomes	**Option 4 is significantly more expensive than all other options and less efficient in achieving biosecurity outcomes** • The system is not risk-based and treats all sectors to be of equal risk. The effectiveness of the system is not substantially increased, but the system incurs significant more management and compliance costs. • National databases and recording systems duplicate industry systems. • Centralised collection and maintenance digital recording systems are beyond the scope required to manage risks of disease outbreak. • Increased availability of data in a centralised system increases the timeliness of response to an outbreak. • Moderately improves effectiveness but does not increase effectiveness associated with high movement, high-risk sectors. Gains occur in better documentation of movement in the private hobby and club sector but identifying the overall horse population still remains a key problem. • Limited improvements in the accuracy of some data, but the risks of non-compliance with whole of life recording could limit the accuracy of information required for biosecurity purposes. • High costs and gaps in compliance are likely to undermine long term durability. • Limited improvements in accuracy for the purpose of biosecurity compared to Option 2.

8. Recommendations

Based on the analysis undertaken across each of the four project tasks and assessment of options, we believe that Option 2 is the best way forward in terms of a national horse traceability system.

We have arrived at this recommendation for several key reasons:

- meets traceability requirements for key emergency horse diseases

- has the lowest cost and yields highest incremental tracing benefits

- enables future incremental improvements in data integrity

- builds on existing strengths and minimises the risks of unintended consequences

- provides improved data to plan and understand the scale and location of horse population

- provides foundations for other options if they become more feasible or preferred in the future.

Options 4 or a national whole of life traceability system would create significant new costs, and compliance and data integrity issues for marginal improvement in tracing efficacy for biosecurity. A pre-incident whole of life tracing system is not required to respond to incursion of the most likely emergency diseases effectively. Similarly, a post-incident whole of life tracing could be needed on a case-by-case basis in limited scenarios.

Better incident preparedness will be achieved by incrementally improving components of the existing horse traceability framework by:

- improving consistency and application of PIC registration

- jurisdictions and industry committing to keeping PIC registers up to date and using PICs on industry registers/databases

- improving the recording of high-risk movements.

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