Cost model guide and assumptions

Livestock Traceability Co-Design

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Purpose

The Cost Model Guide and Assumptions accompanies the National Cost Model for Sheep and Goat eID Implementation MS Excel file.

The guidance material and MS Excel file are the product of the cost analysis work conducted for the Livestock Traceability Co-Design. This package estimates the cost of national implementation of electronic identification (eID) tags for sheep and goats to support future cost and funding decisions.

Background and purpose

Context setting and the purpose of this document

Background

The national cost model and report fits within the livestock traceability co-design scope

Livestock traceability

- The Livestock Traceability Co-Design initiative supports the Sheep and Goat Traceability Taskforce (SGTTF) to develop a harmonised and practical implementation plan with the whole traceability ecosystem for the urgent adoption of eID.
- The plan must develop a fit-for-purpose national livestock traceability system for sheep and goats, as agreed by Agricultural Ministers.

Co-design approach

- Co-design brings the full traceability ecosystem together to inform and align the implementation approach to people, policy, process, data, technology and costs.
- This approach allows the proposed solution to be explored and developed collaboratively to provide transparency on goals and outcomes.

National Cost Model for Sheep and Goat eID Implementation

- The Livestock Traceability Co-Design's Cost Analysis stream developed the National Cost Model for Sheep and Goat eID Implementation MS Excel file (cost model) to support the SGTTF's national implementation of eID. The cost model is a nationally integrated view of short-term implementation costs associated with sheep and goat eID and it will be a part of the framework for further cost-related considerations.
- The cost model will estimate the upfront and ongoing costs of implementation, including costs related to eID tags, equipment, system capability costs, governance, education and change costs, and additional industry costs.

Purpose

Purpose of the guide and cost model

- The cost model guide and assumptions provides users of the cost model with an overview of the model's structure, functionalities, limitations and instructions for future use.
- The following content summarises the current cost estimate based on available information, and also details the approach taken to source, develop, test and validate the underlying assumptions. The assumptions are detailed at the end of the guide.
- This guide supports users to navigate and interpret the cost model by outlining the process to update inputs, change scenarios and test key features to support additional cost analysis work related to the national implementation of eID for sheep and goats.

Risks and limitations

- The figures in this guide and the cost model are based on available data sourced through the Livestock Traceability Co-Design process. Where there were gaps in assumptions or where data was unavailable, a base set of assumptions were tested, refined and/or developed with government and industry stakeholders. The accuracy of the figures are dependent on the accuracy of the underlying figures and estimates.
- The cost model was created with the intention of estimating the upfront, ongoing and total costs (from 1 Jan 2023 to 31 Dec 2032) associated with implementing sheep and goat eID. This guide and the cost model are not suitable to be used for other purposes.
- The information in the guide and cost model are dated as at October 2022.

Basis of assumptions and validation process

Various government and industry stakeholders were engaged to test and validate the assumptions that the cost model is based on

Assumptions validation

Inputs and estimates were requested and tested from jurisdictions and industry through the use of templates, workshops and consultations.

The assumptions in the model were tested and validated with stakeholders.

The progress of the cost analysis was presented through a series of showcases, workshops and consultations, including to the key stakeholders listed on the right.

Co-Design Sponsor Group

- Department of Primary Industries, NSW
- SAFEMEAT
- Department of Jobs, Precincts and Regions, VIC
- Department of Primary Industries and Regional Development, WA
- Sheep Producers Australia
- Integrity Systems Company (ISC)
- AMIC
- Teys
- Goat Industry Council of Australia
- Department of Agriculture, QLD
- WoolProducers Australia
- AusMeat
- MLA
- SGTFF Independent Chair

Co-Design Taskforce

- Wool Producers Australia
- SAFEMEAT
- Integrity Systems Company (ISC)
- Goat Industry Council of Australia
- Department of Jobs, Precincts and Regions, VIC
- Department of Primary Industries and Regional Development, WA
- Department of Primary Industries, NSW
- Department of Agriculture, QLD
- Integrity Systems Company (ISC)
- Australian Meat Industry Council (AMIC)
- Teys
- South Australia
- Tasmania
- Sheep Producers
- Auctions +

Key definitions

The table below defines key terms that are used in the cost model and guide

Term	Definition
Additional industry support	The resourcing contributions from key organisations that will be involved in the implementation of eID to provide leadership, communications and extension support throughout the rollout process. This also includes the estimated resourcing contribution from key supply chain participants to upskill themselves to adopt the new technology and processes.
eID tags	The individual electronic identification tags that will be used for sheep and goats.
Equipment	The hardware and software technology that is required across the supply chain to enable the successful use of eID.
Flock size	This figure is based on the expected number of sheep and goats per farm at the start of rollout, separated by state.
Governance, education and change costs	The regulatory, communications, monitoring and support activities necessary for successful eID implementation. This cost is calculated at the national level and includes expected resourcing needs from jurisdictions.
High-risk biosecurity points	Supply chain points with high-animal congregation zones, inclusive of large saleyards and paddock to paddock movements (P2P)
Mandatory eID start date	The target date from which all sheep and goats will need an eID tag when moving between properties and supply chain points
National costs	Costs which are not linked to a specific state (e.g. governance, education and change, system capability and industry support)
Ongoing costs	The annual costs of activities after the implementation phase. These activities support ongoing maintenance and adoption. The cost figures are represented as average annual figures from implementation to 2032, including inflation.
Optional equipment pieces	Equipment pieces at each supply chain point which are included in the model, but identified by government and industry stakeholders as items that may be in excess of RFID requirements. These equipment pieces may be turned on and off.
State based costs	The cost of eID tags and equipment that is attributable to a particular state at all supply chain points.
System capability costs	The new platform system design, technology communication, change management, customer support and planning activities necessary for successful eID implementation. This cost is calculated at the national level.
Total costs to 2032 (long-term)	The total costs (including all upfront and ongoing costs) expected throughout the supply chain and at the national level for the 10-year period from 1 Jan 2023 to 1 Jan 2032.
Upfront costs (short-term)	Costs necessary to support the implementation of eID by the mandatory eID start date. Most costs are generally incurred prior to this date but the cost of some activities may occur shortly after 2025.

Cost model overview

Use of the cost model

The national cost model was informed by available cost information from state and territory governments, industry and other relevant stakeholders. The data was aggregated into appropriate cost buckets and then tested and validated with stakeholders. The model is a flexible and robust tool to test various cost scenarios. The national cost model may support the SGTTF's future cost and investment decisions for implementation.

In scope

- The cost model estimates the upfront, ongoing and total costs from 1 Jan 2023 to 31 Dec 2032.
- This is inclusive of state-based costs of equipment and eIDs, as well as national costs of governance, education and change, system capability and industry capability costs.
- It estimates the cost for NSW, QLD, TAS, SA and WA. The cost model does not include ACT and NT due to the low presence of sheep and goats in these territories. It also does not include the actual cost of implementation in VIC.

Out of scope

- The consideration of funding sources and mechanisms was outside of the Co-Design Initiative Cost Analysis stream's scope.
- The SGTTF will separately consider funding models for the National Implementation Plan under its Terms of Reference.

Methodology

The development of the national cost framework involved:

- **Collecting information and leveraging existing efforts:** Information requests were sent to states and industry to source existing cost work. The feedback established base assumptions for costs and timing expectations and informed gaps in data where assumptions needed to be developed.
- **Standardising data and creating a robust framework:** Consolidated and reviewed data, with a focus on ensuring comparable data at the state level to build into a national level.
- **Mapping out the supply chain:** Completed a journey mapping exercise to determine the key cost points across the supply chain. This ensured key costs were captured in the cost model.
- **Determining the incremental costs of implementation:** Evaluated the cost of the current state identification system and future costs of the national eID adoption across the supply chain.
- **Presenting outputs:** Developed a dashboard to summarise the costs of implementation. This included building in various scenarios and sensitivities to test.

Model functionalities

The key output sheet of the cost model is a dashboard to visually display costs at the supply chain, state and national level.

The dashboard includes three base implementations scenarios and the functionality to test various sensitivities, including:

- different sheep and goat flock sizes across the states
- different lamb and kids cycles across the states
- equipment implementation timing delays
- increases and decreases in equipment costs
- increases and decreases in system capability costs, governance, education and change costs and additional industry costs

Overview of key features

Various key features can be tested as features in the cost model

Sensitivities	Description
eID tag cost	The ability to test a +/- 5%, 10% or 15% change in eID tag costs on a national or state-by-state basis.
Average Flock and tribe size	The ability to test a +/- 5%, 10% or 15% change to the average number of sheep and goat per producer / feedlot. This can be tested on a national or state-by-state basis.
Average new season lambs / kids	The ability to test a +/- 5%, 10% or 15% change in the size of the average annual season of lambs / kids. This can be tested on a national or state-by-state basis.
Equipment costs	The ability to test a +/- 5%, 10% or 15% change in equipment costs. This can be tested on a national basis.
Equipment rollout start date	The ability to test a 3, 6, 9 or 12 month delay in the start date of equipment rollout. This can be tested on a national or state-by-state basis.
Retrofitting cost	The ability to test a +/- 50% or 100% change in retrofitting costs, which is the amount of structural modification required. This can be tested on a national basis.
Optional equipment pieces	The ability to toggle on/off whether optional equipment costs are included in the cost analysis. This can be tested on a national basis.
System capability costs	The ability to test a +/- 5%, 10% or 15% change in costs associated with scaling the database and enabling other necessary technology considerations. This can be tested on a national basis.
Governance, education and change costs	The ability to test a +/- 5%, 10% or 15% change in costs associated with enabling the necessary support, education, communications and legislation. This can be tested on a national basis.
Additional industry costs	The ability to test a +/- 5%, 10% or 15% change in costs associated with upskilling across the supply change and key industry association support. This can be tested on a national basis

Able to be tested on a state and national basis Able to be tested on a national basis

Implementation scenarios – Tag cost categories

Three scenarios are presented as cost scenarios for the purpose of communicating and comparing costs. Actual implementation scenarios may include a mix of these approaches. The costs of tags in each scenario can be split into the four categories below.

	Scenario 1 *Incremental approach*	Scenario 2 *Risk-based approach*	Scenario 3 *Full incentive approach*
Scenarios description	This approach prioritises the implementation of eID tags to all new season lambs and kids.	This approach prioritises the implementation of eID tags to the sheep, goats, lambs and kids that move to high-risk biosecurity points.	This approach implements eID tags to lambs and kids on properties that have adopted eID equipment.
1. Initial eID tag costs (pre-mandatory start date)	- None of the existing **sheep and goats** flock receive eID tags at this stage. $ All new season **lambs and kids** receive eID tags.	+ The **sheep and goats** that move P2P or to high-risk sale-yards receive eID tags. + The new season **lambs and kids** that move P2P or to high-risk sale-yards receive eID tags.	- None of the existing **sheep and goats** flock receive eID tags at this stage. + The new season **lambs and kids** on producer properties that adopt eID equipment receive eID tags.
2. Visual tag costs (pre-mandatory start date)	- No additional visual tag costs are required for new season **lambs and kids**.	+ The remaining **lambs and kids** that do not move P2P or to high-risk sale-yards receive visual tags.	+ The remaining **lambs and kids** on producer properties that have not yet adopted eID equipment receive visual tags.
3. Residual eID tag costs (post-mandatory start date)	$ All **sheep and goats** receive eID tags. The timing is based on expected movement off-farm from the mandatory start date. - None of the **lambs and kids** from previous seasons require eID tags.	+ The **sheep and goats** that have not moved P2P or to high-risk sale-yards receive eID tags. + The remaining **lambs and kids** from previous seasons that have not moved P2P or to high-risk sale-yards receive eID tags.	$ All **sheep and goats** receive eID tags. The timing is based on expected movement off-farm from the mandatory start date. + The remaining **lambs and kids** from previous seasons receive eID tags.
4. Ongoing lambing/kidding eID tag costs (post-mandatory start date)	$ All **lambs and kids** receive eID tags at the time of birth from the mandatory start date.	$ All **lambs and kids** receive eID tags at the time of birth from the mandatory start date.	$ All **lambs and kids** receive eID tags at the time of birth from the mandatory start date.

Key | - No tag cost at this stage | + Partial tag cost at this stage | $ Full tag cost at this stage

Implementation scenarios – Key input variables

Variable	Scenario 1 *Incremental approach*	Scenario 2 *Risk-based approach*	Scenario 3 *Full incentive approach*
Mandatory eID start date for all movement 'Assumptions' sheet cells I13:N13	This date determines the timing of four tag costs on the previous slide. Changing this input can test the timing for phased approaches.	This date determines the timing of four tag costs on the previous slide. Changing this input can test the timing for phased approaches.	This date determines the timing of four tag costs on the previous slide. Changing this input can test the timing for phased approaches.
Annual lambing and kidding season start date 'Assumptions' sheet cells I33:N33	This schedule determines the timing of tagging for lambs and kids every year.	This schedule determines the timing of tagging for lambs and kids every year.	This schedule determines the timing of tagging for lambs and kids every year.
Proportion of sheep and lambs moving P2P 'Assumptions' sheet cells I36:N36		This figure is used to calculate the proportion of sheep and lambs that move P2P.	
Proportion of sheep and lambs moving to high-risk saleyards 'Assumptions' sheet cells I37:N37		This figure is used to calculate the proportion of sheep and lambs that move to high-risk saleyards.	
Proportion of marked goats and kids moving P2P 'Assumptions' sheet cells I38:N38		This figure is used to calculate the proportion of goats and kids that move P2P.	
Total sheep and goat movement per year 'Assumptions' sheet cells I16:N16	This is used to calculate the schedule of flock movement for full implementation of eIDs from the mandatory start date.	This figure is used to calculate the schedule of flock movement for full implementation of eIDs from the mandatory start date.	This figure is used to calculate the schedule of flock movement for full implementation of eIDs from the mandatory start date.
Equipment installation start date for producers / feedlots 'Assumptions' sheet cells I85:N85			This schedule is used as a timing proxy for producers that will apply eID to new lambs and kids before the mandatory eID tagging start date.

Output summary

A summary of the costs estimates based on the available information

Cost estimate overview

These cost estimates below based on the available assumptions sourced during the Livestock Traceability Co-Design process and are subject to change as assumptions are updated. These figures include an inflation assumption.

	eID tags	Equipment costs	Governance and change costs	System capability costs	Additional industry support
Upfront implementation costs	• Includes all eID tags up to target date of 1 Jan 2025 • Includes double tagging inefficiency • Includes eID that will be phased in for existing sheep, goats, kids and lambs from 2023/24	• All upfront equipment costs (hardware and software) across the supply chain necessary to enable the use of eID	• Upfront national system governance arrangement costs • Updating legislation and establishing compliance monitors • Ongoing comms, education, training and technical support • Designing of the potential provision of grants / subsidies	• New traceability platform system design and build • Change management, communications and support • Development of rollout, technology options and the necessary policies/processes regarding data assets	• Upskilling across the supply chain to adopt eID • Change support from key industry associations to support eID adoption
	Scenario 1 $212m Scenario 2 $232m Scenario 3 $217m	Estimated total cost to Jan 2025 $34m	Estimated upfront costs to Dec 2026 $8m	Estimated upfront costs to Dec 2026 $24m	Estimated upfront costs to Dec 2026 $53m
Ongoing costs	• Ongoing eID tag cost for each new cycle of lambs and kids	• Minimal incremental equipment costs are estimated over the first 10-years as there are warranties and cost allocations for technical support	• Ongoing national system governance arrangement costs • Ongoing compliance and monitoring costs • Ongoing communication, education, training and technical support	• Ongoing system hosting costs and database customer support services	• A few years of additional change support from key industry associations following the mandatory rollout date
	Estimated annual cost over 8 years $56m	-	Estimated annual cost over 8 years $0.4m	Estimated annual cost over 6 years $4m	Estimated annual cost over 3 years $0.3m
Total costs	• The total estimated costs to be incurred between 1 Jan 2023 to 31 December 20321				
	Scenario 1 $662m Scenario 2 $683m Scenario 3 $667m	Estimated total cost to 2032 $34m	Estimated total cost to 2032 $12m	Estimated total cost to 2032 $48m	Estimated total cost to 2032 $54m

Cost estimate overview

These cost estimates below based on the available assumptions sourced during the Livestock Traceability Co-Design process and are subject to change as assumptions are updated.

	Upfront implementation costs			Ongoing costs	Total costs from 1 Jan 2023 to 31 Dec 2032		
eID tags	Scenario 1 $212m	Scenario 2 $232m	Scenario 3 $217m	Estimated annual cost over 8 years $56m	Scenario 1 $662m	Scenario 2 $683m	Scenario 3 $667m
Equipment costs	Estimated total cost to Jan 2025 $34m			-	Estimated total cost to 2032 $34m		
Governance and change costs	Estimated upfront costs to Dec 2026 $8m			Estimated annual cost over 8 years $0.4m	Estimated total cost to 2032 $12m		
System capability costs	Estimated upfront costs to Dec 2026 $24m			Estimated annual cost over 6 years $4m	Estimated total cost to 2032 $48m		
Additional industry support	Estimated upfront costs to Dec 2026 $53m			Estimated annual cost over 3 years $0.3m	Estimated total cost to 2032 $54m		
Total estimated costs of eID implementation over 10 years					Scenario 1 $810m	Scenario 2 $831m	Scenario 3 $815m

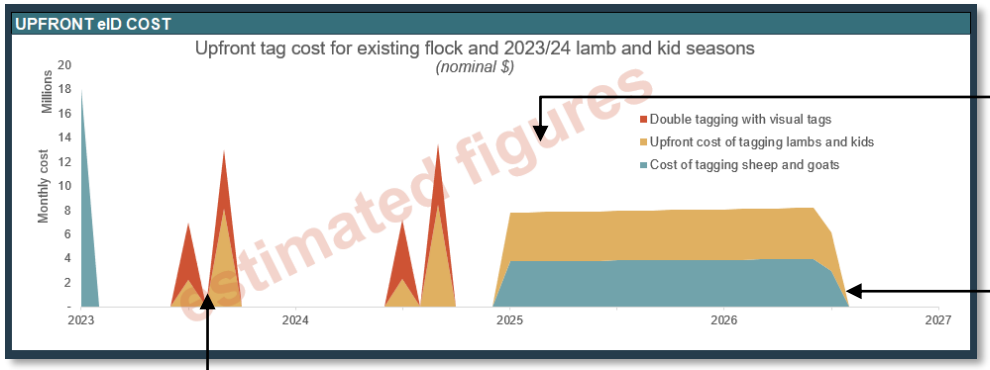
eID tag cost chart

These cost estimates below based on the available assumptions sourced during the Livestock Traceability Co-Design process and are subject to change as assumptions are updated.

Upfront implementation costs			Ongoing costs	Total costs from 1 Jan 2023 to 31 Dec 2032		
Scenario 1	Scenario 2	Scenario 3	Estimated annual cost over 8 years to 2032	Scenario 1	Scenario 2	Scenario 3
$212m	$232m	$217m	$56m	$662m	$683m	$667m

Cost summary

The cost of eID tags is the key variable cost figure between scenarios. The three implementation scenarios have different methods of implementing eID and the timing difference affects costs. Based on the current analysis, Scenario 1 (Incremental approach) has the lowest estimated short-term implementation costs and total costs to 2032. This is due to the assumption of a double tagging inefficiency in Scenarios 2 and 3 that result in additional visual tag costs.



Upfront tagging lamb and kids

The yellow area represents the net cost of eID tags being applied to lamb and kids. Depending on the scenario, some tags may be applied prior to the target mandatory eID date.

Cost of tagging sheep and goats

The light blue area represents the net cost of eID tags (eID tag cost minus visual tag cost) being applied to sheep and goats. Depending on the scenario, some tags may be applied prior to the target mandatory eID date.

Double tagging with visual tags

The red area represents the cost of visual tags being applied to lambs that will eventually be tagged with eID tags.

Some lambs under Scenario 2 (Risk-Based Implementation) and Scenario 3 (Full Incentive Approach) will only have an eID tag implemented once they are moved off farms after the mandatory eID tagging start date. In these scenarios, a proportion of lambs still need to be tagged prior to this under current livestock and biosecurity state regulations and this will be done with a visual tag. The cost of visual tags for the 2023 and 2024 cohort of lambs/kids that fall within this category is referred to as 'double tagging'.

Model guide

A guide on how to operate and interpret the model

Cost model structure

The cost model is a flexible tool that is structured in the four sections below.

01 Outputs

Displays the key outputs of the model in tables and charts and includes toggles to change scenarios and sensitivities.

Key elements:

- Dashboard summary to illustrate costs by jurisdictions and supply chain points
- Ability to toggle between three base implementation scenarios to test the estimated cost implications
- Ability to run sensitivity tests on equipment costs, sheep and goat flock sizes, implementation timing, optional equipment pieces, system capability costs and governance and change costs

02 Inputs

Includes the assumptions used to inform model calculations, such as costs, dates, facilities figures and inflation rates.

Key elements:

- Cost inputs across the various jurisdictions and supply chain points
- Cost assumptions including technology costs, system capability costs and governance and change costs. These may be upfront (which are applied over an assumed time period) and ongoing costs
- The ability to change the number of equipment pieces required and mark items as optional

03 Calculations

Includes calculations to generate total cost outputs, as well as forecasting costs over a 10-year timeframe.

Key elements:

- Calculations to estimate the cost at each supply chain point, split into expected costs incurred in each state
- Calculations over 10-year timeframe to estimate the upfront implementation costs and ongoing costs
- Calculations of the necessary system capability uplift costs to meet mandatory eID implementation
- Calculations of the necessary governance and change costs (including education and support) to implement eID

04 Assumptions Book

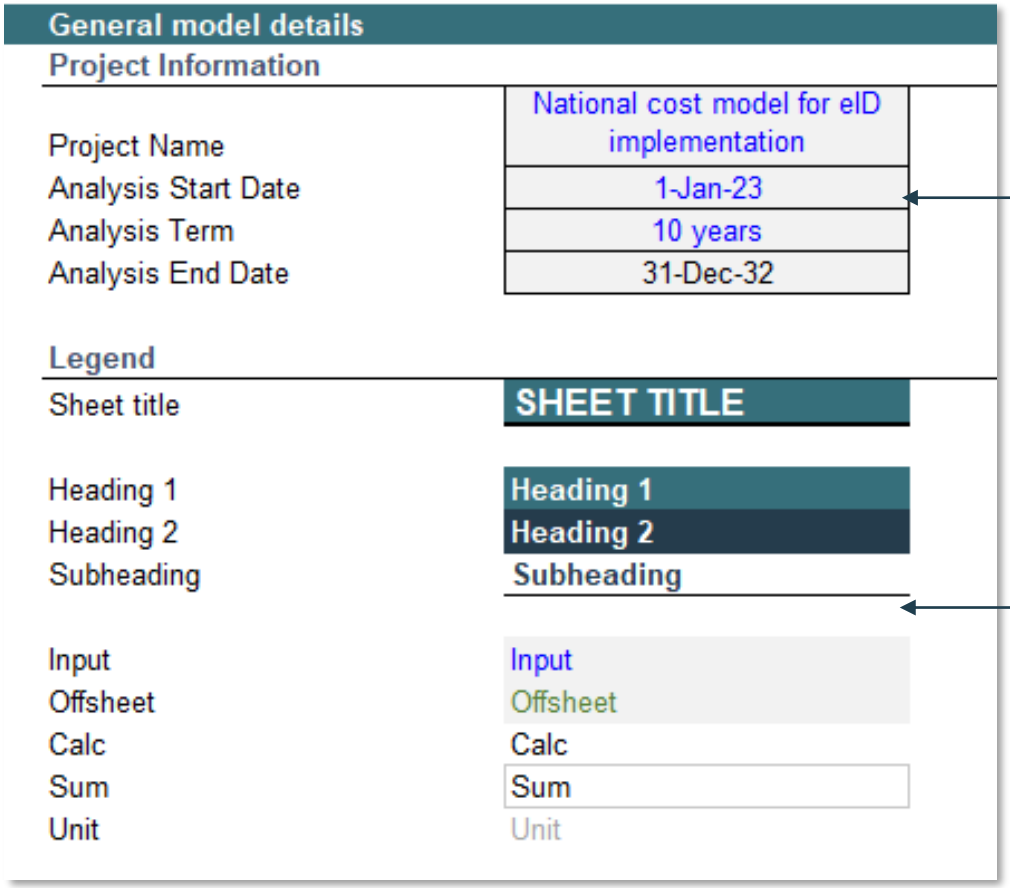
Provides details on the inputs in the cost model, including the source and general assumptions taken.

Key elements:

- Details of the underlying assumptions, including general commentary on the source
- Extracts of the assumptions are contained within this report

Navigating the model (1 of 2)

The ‘Database’ sheet provides an introduction to the project name, timeframe and formatting guide.



Project Information: Details on the project name and analysis timeframe.

Legend: Examples of the formatting that is used throughout the model to indicate titles, headings and different types of values.

- **Input** values are hardcoded values that can be changed.
- **Offsheet** values are references from other sheets within the model.
- **Calc** values are calculations within the worksheet.
- **Sum** values are total figures of rows within the worksheet
- **Units** indicate the units of measurement for the row (e.g. $, %, date).

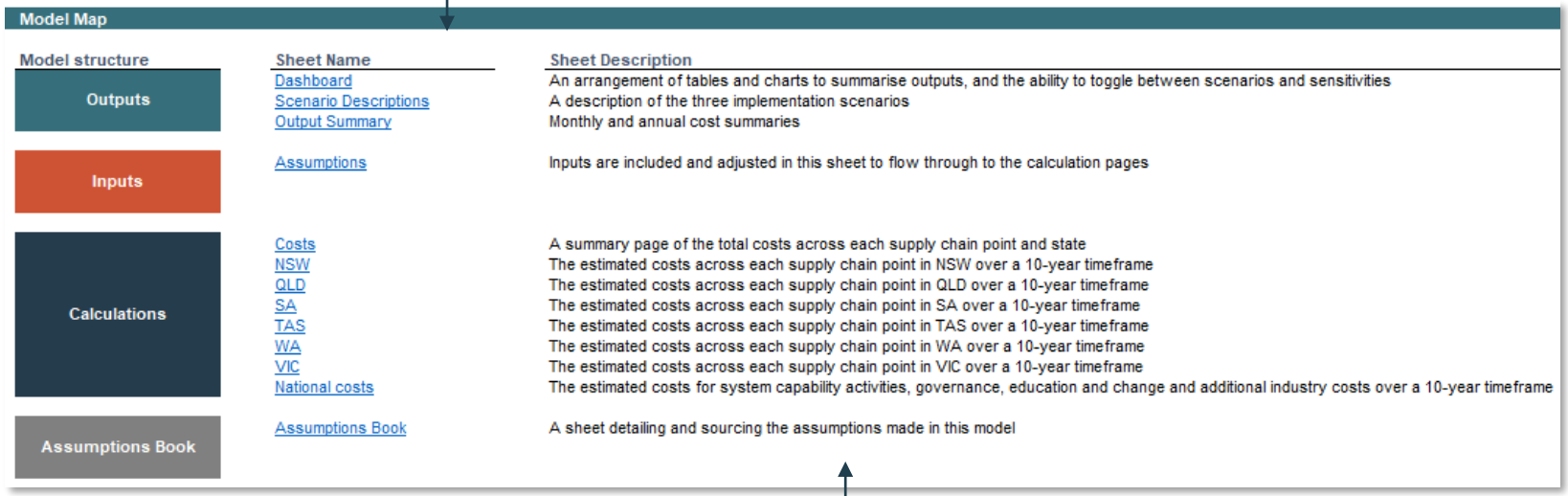
Section summary:

The ‘General model details’ section within the sheet outlines the project name and timeframe of the model, and details the different formatting styles used throughout the workbook.

Navigating the model (2 of 2)

The cost model includes a model map in the 'Database' worksheet that allows users to easily move between worksheets.

Sheet name: Each sheet is listed and hyperlinked for direct access to each individual worksheet within the model.



Model Map

Model structure	Sheet Name	Sheet Description
Outputs	Dashboard	An arrangement of tables and charts to summarise outputs, and the ability to toggle between scenarios and sensitivities
	Scenario Descriptions	A description of the three implementation scenarios
	Output Summary	Monthly and annual cost summaries
Inputs	Assumptions	Inputs are included and adjusted in this sheet to flow through to the calculation pages
Calculations	Costs	A summary page of the total costs across each supply chain point and state
	NSW	The estimated costs across each supply chain point in NSW over a 10-year timeframe
	QLD	The estimated costs across each supply chain point in QLD over a 10-year timeframe
	SA	The estimated costs across each supply chain point in SA over a 10-year timeframe
	TAS	The estimated costs across each supply chain point in TAS over a 10-year timeframe
	WA	The estimated costs across each supply chain point in WA over a 10-year timeframe
	VIC	The estimated costs across each supply chain point in VIC over a 10-year timeframe
	National costs	The estimated costs for system capability activities, governance, education and change and additional industry costs over a 10-year timeframe
Assumptions Book	Assumptions Book	A sheet detailing and sourcing the assumptions made in this model

Model structure: The sheets are grouped in the four sections outlined in the previous page.

Sheet description: The sheets are grouped in the four sections outlined in the previous page.

Section summary:

The Model Map section provides a breakdown of all worksheets included in the model as well as a high level description and access link to each individual worksheet.

Outputs – Dashboard sheet overview

The dashboard is the key output page for users to analyse costs and test scenarios and sensitivities.

Sheet summary:

The model dashboard is a summary of the estimated costs across supply chain points, jurisdictions and at the national level. There is the functionality on this worksheet to toggle between the three base implementation scenarios and test sensitivities to see the effects on cost.

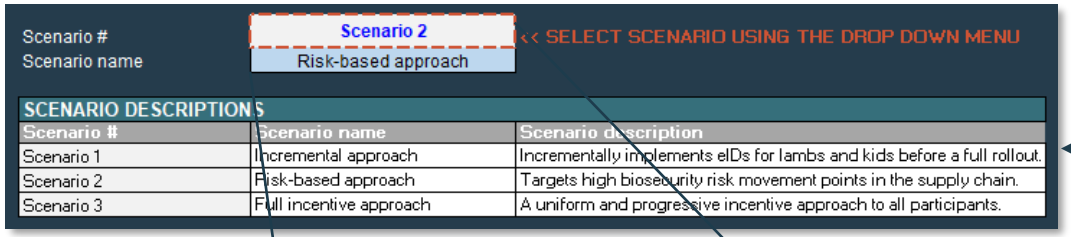
Output features: Further details on the six sections numbered on the left will be provided in the following pages.

The sections include:

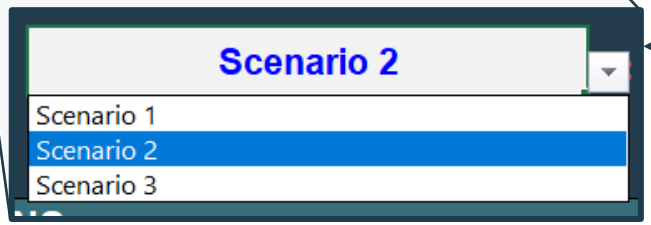
1. Scenario descriptions
2. Sensitivities
3. State specific charts
4. Key cost chart
5. Cost summaries

Outputs – Dashboard section (1. Scenario)

The scenario toggle sets the active implementation scenario in the model.



Scenario name and description:
A short description of the three implementation scenarios.



Scenario toggle:
A dropdown list for the user to select which scenario is active.

The dropdown list can be accessed by clicking the downward facing arrow in the right of the scenario input cell.

Once the scenario is selected, all the related values will flow through the model and the output figures will update.

Section summary:

The scenario selection changes underlying inputs to match the three implementation scenarios:

1. Incremental approach
2. Risk-based approach
3. Full incentive approach

Further details on the implementation scenarios can be found on Slide 9.

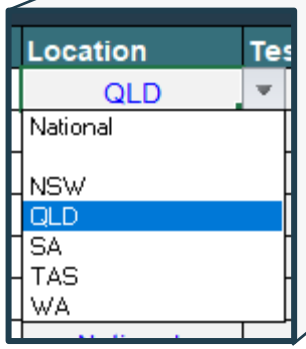
Outputs – Dashboard section (2. Sensitivities)

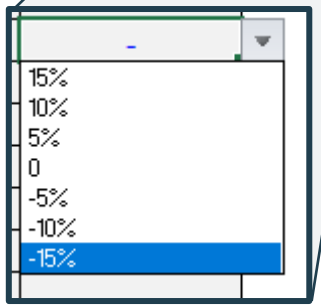
The sensitivity selection tests the effect of changes in certain variables.

Sensitivity name and description: A short description of the various sensitivities that can be toggled.

SENSITIVITIES (applied to existing base of assumptions)			
Sensitivity name	**Sensitvity description**	**Location**	**Test value**
eID tag cost	Increases / decreases the cost of eID tags nationally	NSW	-
Flock size	Increases/decreases the size of the average sheep and goat flock	QLD	-
Lamb and kids size	Increases/decreases the amount of lamb and kids born each year	SA	-
Hardware costs	Increases/decreases the cost of hardware	National	-
Timing	Increases the time of implementation	WA	-
Retrofitting cost	Increases/decreases the cost of structural upgrades	National	-
Include optional items	Toggles whether to include optional costs	National	-
System capability cost	Increases/decreases the costs related to system capability uplift	National	-
Governance and change cost	Increases/decreases the costs related to governance, education and change	National	-
Additional industry cost	Increases/decreases the costs related to additional industry costs	National	(15%)

CONTROL THE VALUE AND SCOPE OF THE SENSITIVITY TEST BY CHANGING THE LOCATION AND TEST VALUES ^





Location toggle:
A dropdown list for the user to select whether the sensitivity is applied at a national level or to a certain jurisdiction.

Test value:
A dropdown list for the user to select a sensitivity amount to test. This is a selection of percentages (%) or a number of months to apply.

Once the user selects a value and refreshes the model (F9 button), the sensitivity will flow through to the calculations and outputs.

Section summary:

Sensitivities can be applied to certain costs and timeframes by changing input cells in this table.

The user can choose to apply the sensitivities to a certain jurisdiction and choose the percentage value to test (5%, 10%, and 15% increases / decreases).

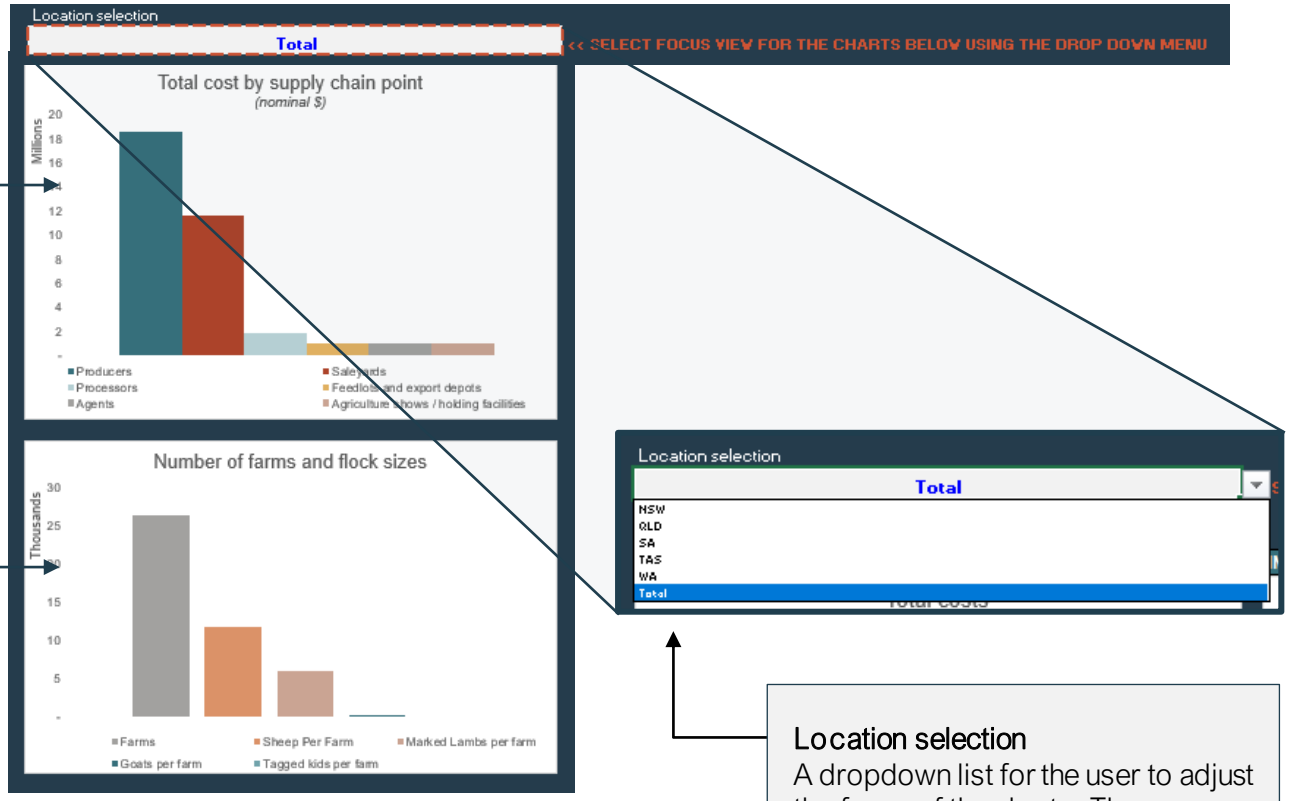
Further details on the implementation scenarios can be found on Slide 8.

Outputs – Dashboard section (3. State specific details)

The location selection toggle sets the focus for the three charts.

Total cost by supply chain point
The total costs (nominal value) expected to be incurred at each point in the supply chain for the selected location.

Number of farms and flock sizes
The number of farms, sheep (average figure), goats (average figure), marked lambs (annual figure) and tagged kids (annual figure) estimated to be on-farm for the selected location.



Location selection
A dropdown list for the user to adjust the focus of the charts. The user can select a certain state or the total value.

Once the user selects a location and refreshes the model (F9 button), the charts will update to display the corresponding data.

Section summary:

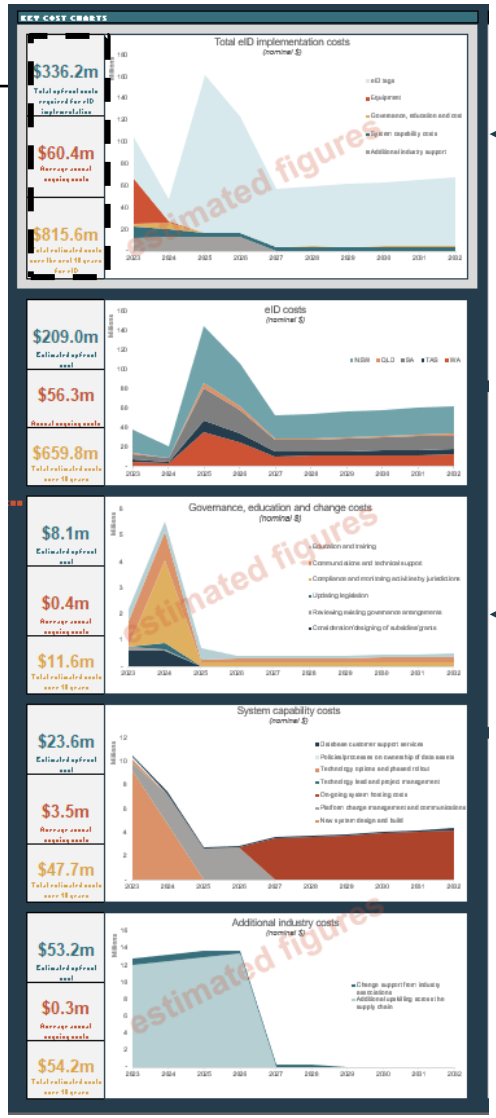
These charts depict the cost characteristics for a certain jurisdiction. The user can use the dropdown list to select the location that they want to focus on.

Outputs – Dashboard section (4. Key cost charts)

The key cost charts depict the total costs of eID implementation and the key components, with changes in sensitivity and scenarios reflected across.

Summary tables
The three boxes to the left of each graph summarise total costs over time:

- The top box with green text shows the estimated upfront cost
- The middle box with red text shows the estimated ongoing costs
- The bottom box with yellow text shows the total estimated costs over 10 years



Total implementation costs
The top chart is a summary chart of all key costs expected with the implementation of eID tags for sheep and goats. It is the total of the other charts in this section.

Other key cost charts
The key cost categories of the project are split out individuals charts so that the user can see the breakdown of the underlying activities/costs.

Section summary:

The key cost chart summarise the total costs of eID implementation and the key components of this cost over 10 years.

Costs represented include:

- Total implementation costs
- eID costs
- Equipment costs
- Governance, education and change costs
- System capability costs
- Additional industry costs

The left of each chart includes a breakdown of the total estimated upfront costs, upfront eID tag costs and total estimated costs over ten years.

Outputs – Dashboard section (5. Cost summaries)

Total upfront costs
This table summarises the estimated costs required to implement eID over the short-term. These are costs expected up to the 1 Jan 2025 target mandatory eID start date but some costs may be incurred after this date.

These are the key upfront costs expected across the supply chain and at a national level.

COST SUMMARIES

TOTAL UPFRONT COSTS (nominal $)

**The upfront eID tag cost covers the period required to apply eID to the existing flock and 2023/24 lamb/kid seasons*
***Equipment & Governance, education and change costs are up to 2025*

		Scenario 1	Scenario 2	Scenario 3
NSW	eID tags	94.2m	101.0m	96.0m
	Equipment	12.4m	12.4m	12.4m
QLD	eID tags	6.6m	7.3m	6.7m
	Equipment	1.0m	1.0m	1.0m
SA	eID tags	45.8m	51.5m	47.3m
	Equipment	8.0m	8.0m	8.0m
TAS	eID tags	13.9m	16.1m	14.3m
	Equipment	6.5m	6.5m	6.5m
WA	eID tags	51.0m	56.2m	52.3m
	Equipment	6.4m	6.4m	6.4m
Governance, education and change Estimated upfront costs to Dec 2025		8.1m		
System capability Estimated upfront cost to Dec 2026		23.6m		
Additional industry support Estimated upfront cost to Dec 2026		53.2m		
Total estimated upfront costs		**330.8m**	**351.4m**	**335.9m**

Scenarios
The outputs of the three key scenarios are shown in the table. The key difference between the scenarios is the cost of tags.

Equipment costs and costs associated with governance, education and change, system capability and additional industry support are not expected to change significantly between scenarios.

Total cost
The total estimated upfront cost across all supply chain participants and at the national level.

Section summary:

This table summarises the estimated upfront, ongoing and total costs of implementation. There are three tables – one for each of the cost categories (only the short-term cost table is shown on the left).

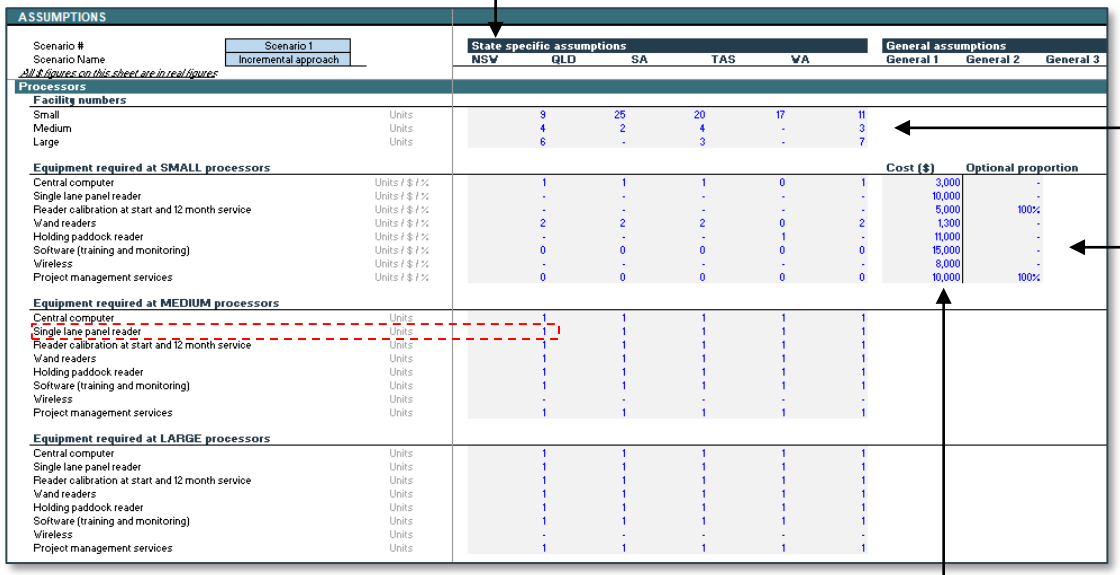
The costs are based on the set of assumptions sourced during the Livestock Traceability Co-Design period and are detailed in the 'Model Assumptions' section of this pack.

Inputs – Assumptions sheet

Changes to most of the underlying inputs are made in the ‘Assumptions’ sheet.

State specific assumptions:
The assumptions for each state are listed down the column. For example, the user should interpret the value outlined in the red box below as each medium processor in NSW requiring one single lane panel reader.

Input figures (blue text):
All values in the blue text are inputs that can be directly changed within the cell. The



ASSUMPTIONS

Scenario #	Scenario 1								
Scenario Name	Incremental approach								
All $ figures on this sheet are in real figures		State specific assumptions					General assumptions		
		NSW	QLD	SA	TAS	WA	General 1	General 2	General 3
Processors									
Facility numbers									
Small	Units	9	25	20	17	11			
Medium	Units	4	2	4	-	3			
Large	Units	6	-	3	-	7			
Equipment required at SMALL processors							Cost ($)	Optional proportion	
Central computer	Units / $ / %	1	1	1	0	1	3,000	-	
Single lane panel reader	Units / $ / %	-	-	-	-	-	10,000	-	
Reader calibration at start and 12 month service	Units / $ / %	-	-	-	-	-	5,000	100%	
Wand readers	Units / $ / %	2	2	2	0	2	1,300	-	
Holding paddock reader	Units / $ / %	-	-	-	1	-	11,000	-	
Software (training and monitoring)	Units / $ / %	0	0	0	0	0	15,000	-	
Wireless	Units / $ / %	-	-	-	-	-	8,000	-	
Project management services	Units / $ / %	0	0	0	0	0	10,000	100%	
Equipment required at MEDIUM processors									
Central computer	Units	1	1	1	1	1			
Single lane panel reader	Units	1	1	1	1	1			
Reader calibration at start and 12 month service	Units	1	1	1	1	1			
Wand readers	Units	1	1	1	1	1			
Holding paddock reader	Units	1	1	1	1	1			
Software (training and monitoring)	Units	1	1	1	1	1			
Wireless	Units	-	-	-	-	-			
Project management services	Units	1	1	1	1	1			
Equipment required at LARGE processors									
Central computer	Units	1	1	1	1	1			
Single lane panel reader	Units	1	1	1	1	1			
Reader calibration at start and 12 month service	Units	1	1	1	1	1			
Wand readers	Units	1	1	1	1	1			
Holding paddock reader	Units	1	1	1	1	1			
Software (training and monitoring)	Units	1	1	1	1	1			
Wireless	Units	-	-	-	-	-			
Project management services	Units	1	1	1	1	1			

Cost:
Changing the cost of equipment will apply to all equipment pieces in the supply chain point. For example, changes to these cost figures will apply to all equipment assumptions for processors.

All inputs are real dollar costs (excludes inflation) as at Oct 2022. Inflation is later applied in sheets within the ‘Calculations’ section.

Option proportion
The user is able to put in a % to indicate the proportion of option uptake.

For example, inputting 70% will lead to 70% of the costs for the corresponding equipment piece being omitted from the final calculation.

Section summary:

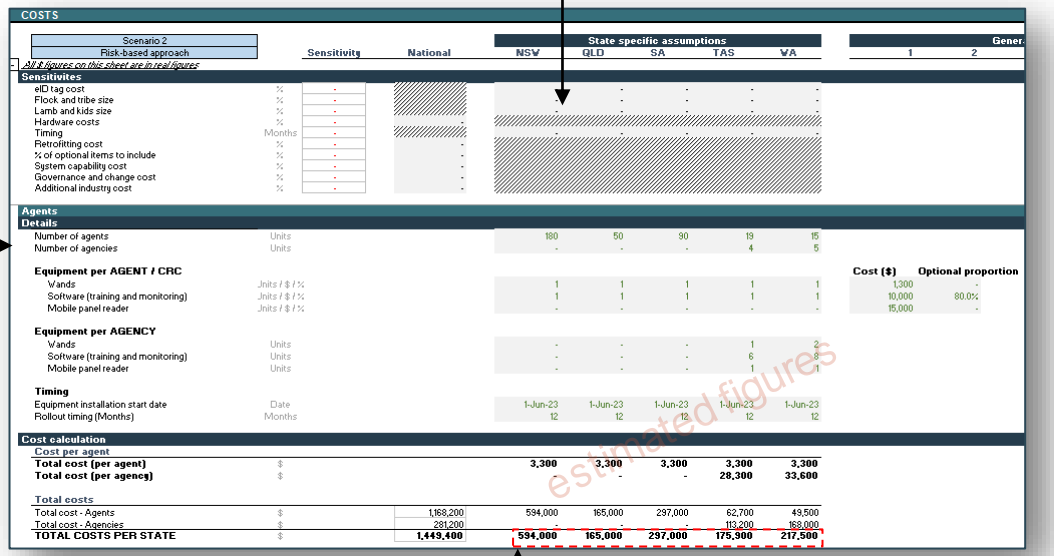
The ‘Assumptions’ sheet contains the underlying data that flow through to the calculations. Changes made here will affect the final figures shown in the ‘Dashboard’ sheet.

Calculations – Costs sheet

The estimated total costs at each supply chain point are calculated in this sheet.

Details:
Each supply chain point has a section that lists out the assumptions that flow through to the calculations. The green text indicates that these are values being sourced from the 'Assumptions' sheet.

Sensitivities:
The section at the top shows whether any sensitivities are being applied to the key features listed. The selection of sensitivity tests are done in the 'Dashboard' sheet and listed only here for calculation purposes.



Cost calculation:
The estimated average participant and total costs for each state are calculated here. These figures are based on the:

- number of participants (e.g. number of agents/agencies)
- number of equipment required for each participant
- cost of equipment (and whether the equipment piece is optional)

For example, the red box show the total estimated costs for agents and agencies across all states.

Section summary:

The 'Costs' sheet calculates the total expected cost for each supply chain point across each of the states.

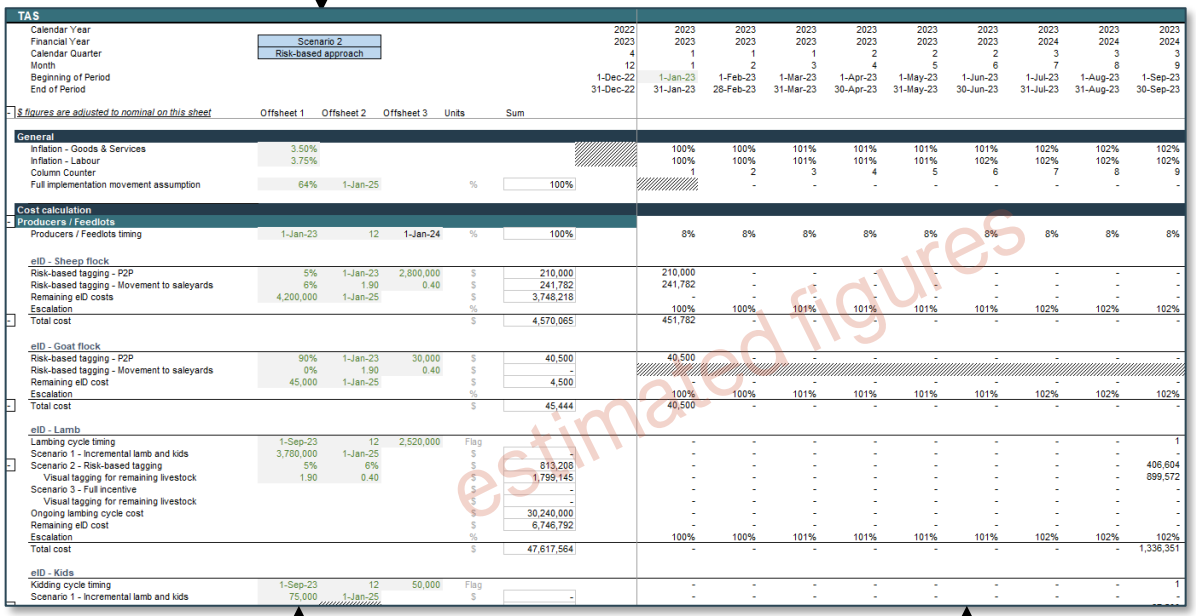
All values calculated in this sheet excludes inflation as at Oct 2022. Inflation is later applied in the 'NSW', 'QLD', 'SA', 'TAS', 'WA', 'VIC' and 'National' sheets.

No changes should be made to the values in this sheet directly.

Calculations – State sheets and National sheet

The ‘NSW’, ‘QLD’, ‘SA’, ‘TAS’, ‘WA’, ‘VIC’ and ‘National’ sheets calculate costs across a 10-year period

Active scenario:
The active scenario is shown in the blue box. Difference scenarios will affect the calculations in these sheets.



TAS															
Calendar Year						2022	2023	2023	2023	2023	2023	2023	2023	2023	2023
Financial Year	Scenario 2					2023	2023	2023	2023	2023	2023	2023	2024	2024	2024
Calendar Quarter	Risk-based approach					4	1	1	1	2	2	2	3	3	3
Month						12	1	2	3	4	5	6	7	8	9
Beginning of Period						1-Dec-22	1-Jan-23	1-Feb-23	1-Mar-23	1-Apr-23	1-May-23	1-Jun-23	1-Jul-23	1-Aug-23	1-Sep-23
End of Period						31-Dec-22	31-Jan-23	28-Feb-23	31-Mar-23	30-Apr-23	31-May-23	30-Jun-23	31-Jul-23	31-Aug-23	30-Sep-23
$ figures are adjusted to nominal on this sheet	Offsheet 1	Offsheet 2	Offsheet 3	Units	Sum										
General															
Inflation - Goods & Services	3.50%						100%	100%	101%	101%	101%	101%	102%	102%	102%
Inflation - Labour	3.75%						100%	100%	101%	101%	101%	102%	102%	102%	102%
Column Counter							1	2	3	4	5	6	7	8	9
Full implementation movement assumption	64%	1-Jan-25		%	100%		-	-	-	-	-	-	-	-	-
Cost calculation															
Producers / Feedlots															
Producers / Feedlots timing	1-Jan-23	12	1-Jan-24	%	100%		8%	8%	8%	8%	8%	8%	8%	8%	8%
eID - Sheep flock															
Risk-based tagging - P2P	5%	1-Jan-23	2,800,000	$	210,000		210,000	-	-	-	-	-	-	-	-
Risk-based tagging - Movement to saleyards	6%	1.90	0.40	$	241,782		241,782	-	-	-	-	-	-	-	-
Remaining eID costs	4,200,000	1-Jan-25		$	3,748,218		-	-	-	-	-	-	-	-	-
Escalation				%			100%	100%	101%	101%	101%	101%	102%	102%	102%
Total cost				$	4,570,065		451,782	-	-	-	-	-	-	-	-
eID - Goat flock															
Risk-based tagging - P2P	90%	1-Jan-23	30,000	$	40,500		40,500	-	-	-	-	-	-	-	-
Risk-based tagging - Movement to saleyards	0%	1.90	0.40	$	-		-	-	-	-	-	-	-	-	-
Remaining eID cost	45,000	1-Jan-25		$	4,500		-	-	-	-	-	-	-	-	-
Escalation				%			100%	100%	101%	101%	101%	101%	102%	102%	102%
Total cost				$	45,444		40,500	-	-	-	-	-	-	-	-
eID - Lamb															
Lambing cycle timing	1-Sep-23	12	2,520,000	Flag			-	-	-	-	-	-	-	-	1
Scenario 1 - Incremental lamb and kids	3,780,000	1-Jan-25		$	-		-	-	-	-	-	-	-	-	-
Scenario 2 - Risk-based tagging	5%	6%		$	813,208		-	-	-	-	-	-	-	-	406,604
Visual tagging for remaining livestock	1.90	0.40		$	1,799,145		-	-	-	-	-	-	-	-	899,572
Scenario 3 - Full incentive				$	-		-	-	-	-	-	-	-	-	-
Visual tagging for remaining livestock				$	-		-	-	-	-	-	-	-	-	-
Ongoing lambing cycle cost				$	30,240,000		-	-	-	-	-	-	-	-	-
Remaining eID cost				$	6,746,792		-	-	-	-	-	-	-	-	-
Escalation				%			100%	100%	101%	101%	101%	101%	102%	102%	102%
Total cost				$	47,617,564		-	-	-	-	-	-	-	-	1,336,351
eID - Kids															
Kidding cycle timing	1-Sep-23	12	50,000	Flag			-	-	-	-	-	-	-	-	1
Scenario 1 - Incremental lamb and kids	75,000	1-Jan-25		$	-		-	-	-	-	-	-	-	-	-

Offsheet reference figures (green text):
The green text indicates that the assumption is being linked from the ‘Costs’ or ‘Assumptions’ sheets. These values are here for calculation purposes.

Calculations:
The monthly costs are being calculated in these cells and are based on the input values.

Section summary:

The ‘NSW’, ‘QLD’, ‘SA’, ‘TAS’, ‘WA’, ‘VIC’ and ‘National’ sheets estimate the costs on a monthly basis for the 10 year period to Dec 2032. This includes all upfront and ongoing costs.

The total costs calculated in these sheets are converted to nominal values (includes inflation).

No changes should be made to the values in these sheets directly.

Model assumptions

Details of the assumption that have gone into the model

Assumptions overview

The assumptions in the model were developed through the Livestock Traceability Co-Design process with key stakeholders

Sourcing assumptions

A range of assumptions were used in the cost model to estimate the costs of national eID implementation. The following sources were used to build the foundation:

- **ABARES base assumptions:** The cost model used a set of assumption from a cost modelling exercise conducted by the Australian Bureau of Agricultural and Resource Economics (ABARES) in early 2022 as the foundation. A discussion with ABARES cost model team was held to understand the model's purpose, limitations and mechanics.
- **Request for information:** Cost information was requested from jurisdictions and relevant industry stakeholders to understand any existing and relevant costing analysis work. Data was leveraged where appropriate and gaps in data were identified.

Verification process

The base set of assumptions sourced from ABARES was tested with the jurisdictions and industry through a series of consultations. The process involved a supply chain mapping exercise with various key stakeholders. Participants were asked to confirm the relevant supply chain points to include in the cost model and to review the activities within these points.

Cost points and equipment pricing assumptions along the supply chain were verified with key industry and jurisdiction stakeholders. This process confirmed the key cost points at each stage of this supply chain and at the national level (governance, education and change activities, system capability uplift activities and additional industry costs). Activities and equipment pieces that were viewed to be optional were identified by stakeholders at this point.

Refinement process

The assumptions were further updated through a refinement with jurisdictions and industry. Jurisdictions were provided with the set of base assumptions and asked to provide updated figures where available. Detail cost analysis discussions were held with relevant stakeholders to refine the following cost assumptions:

- **eID tag cost:** Consultations were held with eID tag suppliers to understand current market prices and the availability of supply. The eID tag cost estimate was developed with the Livestock Traceability Co-Design's Technology and Data team based on these consultations.
- **Equipment costs and needs:** Consultations were held with equipment providers to understand current market prices and the availability of supply. Equipment prices were refined to reflect current market prices. The updated prices and required equipment at each point in the supply chain were tested with jurisdictions and refined.
- **Governance, education and change costs:** The Livestock Traceability Co-Design's Policy & Processes and People & Change teams held consultations to understand the governance, education and change activities required to enable eID implementation. The estimated cost for these activities were developed based on the consultations and benchmarked against the actual costs required to implement eID in Victoria. This also included the expected resourcing support of each jurisdiction required to support mandatory eID, which was based on FTE estimates from each jurisdiction and has been captured as a national cost.
- **System capability uplift costs:** Consultations were held with Integrity Systems to understand the activities required to scale the database for sheep and goat eID. Other necessary system capability related costs were also developed with the Livestock Traceability Co-Design's Technology and Data team.
- **Additional industry costs:** Consultations were with key industry members and FTE estimates on the expected amount of upskilling across the supply chain and support from industry associations from were provided.

Supply chain definitions

Costs have been grouped across the five supply chain points and three national costs shown below

Supply chain defintions

Producers / Feedlots

- Any individual(s) owning and/or managing a property on which sheep or goats are bred, agisted, reared or kept at any point of the animal's life for any reason. Includes artificial breeding centres, vets, registered goat depots, farms, peri-urban / hobby farms and primary producers.

Saleyards

- Anyone operating or employed in sheep and goat saleyards (mobile or fixed) or any other location where animals are offered for sale (include on-farm, showgrounds, clearing sales etc.).

Processors

- Anyone or any business owning, operating, or employed in processing of sheep and goats and their carcasses, including abattoirs and excluding knackeries.

Agents

- Any individual(s) involved in the preparation or presentation of sheep and goats for sale and purchase at any location (saleyard, process, export depot, digital / virtual sales etc.).

Other Facilities

- **Agricultural shows:** Anyone or any business organizing or managing an agricultural show or other public event to which sheep and goats will be taken for exhibition or public display.
- **Holding facilities / Export depots:** Anyone transiting sheep and goats through holding properties, assembly points, pounds / pens, transit centres, and holding yards, and the operations at those locations. Export depots are those who operate export registered premises, or export depot operators (EDO) employed by a livestock export license holder.
- **Ports:** Any business operating with the intent to load and unload animals on a ship for transportation at other locations (process, export depot)

National costs

System Capability

- Any ongoing increases and decreases in technology system costs incurred from the national implementation of eID. Inclusive from the new system design and build, on-going maintenance, to phased roll-out.

Governance, Education and Change

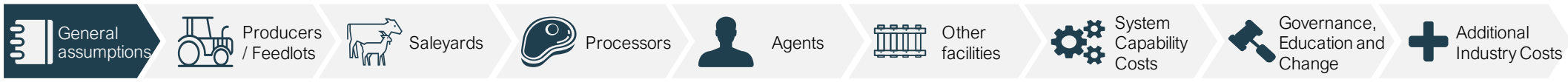
- Any ongoing increases and decreases in the governance change costs incurred from the national implementation of eID. Includes arrangements, legislation, communication, training and grant allocation.

Additional Industry Support

- Any additional industry costs in upskilling and change support, as well as escalation assumptions for the increase in costs of goods and services and labour.

General assumptions

Item	Assumption
Inflation assumptions	
Goods and services inflation rate	3.50%, sourced from the Federal Budget 2022/23 released on Tuesday 25 October 2022. This is the estimated goods and services inflation rate in June 2024. This rate is applied to the cost of all equipment and eID tag costs in the cost model.
Labour growth rate	3.75%, sourced from the Federal Budget 2022/23 released on Tuesday 25 October 2022. This is the estimated wage price growth rate in June 2024. This rate is applied to the cost assumptions that use an FTE proxy in the cost model.
Movement assumption	
Total sheep and goat movement per year	64%, calculated from NLIS movement data (fy21/22) sourced from Integrity Systems. This calculation uses total sheep and total EID mob based movements movement data.
Other general assumptions	
Supply chain assumptions	These supply chain points were confirmed with jurisdictions and industry as the appropriate cost points due to the expected eID legislation and processes. Supply chain points that are not expected to incur significant incremental costs due to eID have not been included in the cost model at this stage.



Producer / feedlot assumptions

Item	Assumption
Facility numbers	
Total number of farms with sheep or goats	• The NSW figure was reviewed and validated by jurisdictional representatives on a costing discussion. • The QLD figure is based on ABARES farm survey data and was provided to jurisdictional representations to verify. • The SA figure was provided by jurisdictional representatives and is based on the number of active PICs (sheep/goat movement since 1 Jan 2021). • The TAS figure was provided by jurisdictional representatives and includes projections to account for the upcoming implementation of new traceability regulations in TAS. • discussed on numerous cost discussions. • The WA figure is sourced from an ABARES estimate farms larger than 200 sheep and validated by a jurisdictional representatives.
Number of farms with sheep	• The NSW and QLD figures are sourced from ABARES farm survey data using a 5-year average to 2019-20 and were provided to jurisdictional representations to verify. • The SA figure provided by jurisdictional representations and is based on PIC data. • The TAS figure was provided by jurisdictional representatives and includes projections to account for the upcoming implementation of new traceability regulations in TAS. • The WA figure was provided by jurisdictional representatives.
Number of farms with goats	• The NSW and QLD figures have not been updated due to the low visibility of goat data – a base assumption of zero has been taken where goat data is not available. • The SA figure provided by jurisdictional representations and is based on PIC data. • The WA figure of zero was confirmed with jurisdictional representatives on a cost discussion noting the low availability of goat data and low goat population in WA. • The TAS figure was provided by jurisdictional representatives and includes projections to account for the upcoming implementation of new traceability regulations in TAS.
Feedlot size categories (S/M/L)	Feedlots size categories are classified by annual throughput (small = <100,000, medium = 100,000-600,000 large = 600,000+). This was the categorisation used in the ABARES model and tested with stakeholders.
Feedlot numbers	• Conversations were held with the NSW, QLD and SA representatives to confirm that feedlots are not a significant separate entity for their jurisdictions. • The TAS and WA figures were sourced from jurisdictional representatives.

Producer / feedlot assumptions

Item	Assumption
Sheep and goat numbers	
Number of sheep per farm (at start of rollout)	• The NSW and QLD figures are sourced from ABARES farm survey data using a 5-year average to 2019-20 and were provided to jurisdictional representations to verify. • The SA figure was provided by jurisdictional representatives • The TAS figure was provided by jurisdictional representatives and includes projections to account for the upcoming implementation of new traceability regulations in TAS. • The WA figure was sourced from ABARES farm survey data using a 5-year average to 2019-20 and confirmed by the jurisdictional representatives.
Number of goats per farm	• The NSW and QLD figures have not been updated due to the low visibility of goat data – a base assumption of zero has been taken where goat data is not available. • The SA and TAS figures were provided by jurisdictional representatives. • The WA figure of zero was confirmed with jurisdictional representatives on a cost discussion noting the low availability of goat data and low goat population in WA.
Number of lambs per farm that will be tagged (annually)	• The NSW, QLD and TAS figure is sourced from ABARES farm survey data using a 5-year average to 2019-20. • The SA and WA figure is calculated from the data provided by jurisdiction representatives.
Number of kids that will be tagged (annually)	• The NSW, WA, SA and QLD figures have not been updated due to the low visibility of goat data – a base assumption of zero has been taken where goat data is not available. • The TAS figure was provided by jurisdictional representatives.
Annual lambing and kidding season start date	This figure is based on the 'Timing of Lambing in Australian Flocks' report by the Department of Agriculture and Food, Western Australia.

Producer / feedlot assumptions

Item	Assumption
Movement	
Portion of sheep and lambs moving P2P	• The NSW, QLD, SA and WA figures are sourced from ABARES farm survey data using a 5-year average to 2019-20. • The TAS figure was provided by jurisdictional representatives.
Portion of sheep and lambs moving to high-risk saleyards	• The NSW, QLD, SA, TAS and WA figure is sourced from MLA National Sheep Saleyard survey data using a 4 year average from 2016/17 to 2019/20.
Portion of marked goats and kids moving P2P	• The NSW, QLD, SA and WA figures are using the sheep/lamb P2P figure as a proxy due to the low availability of goat data. • The TAS figure was provided by jurisdictional representatives.
Tag costs	
Gross cost per eID tag	This cost was developed from consultations with eID tag suppliers to understand current market prices and the availability of supply. The cost was developed with the Livestock Traceability Co-Design's Technology and Data team based on these consultations.
Gross cost per visual tag	This figure was sourced from a detailed analysis of current market offerings for visual tags.
Equipment rollout for producers / feedlots	
Mandatory sheep and goat tagging start date	All scenarios use the 1 Jan 2025 target date announced by the SGTTF.
Equipment installation start date	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.
Equipment rollout timing (months)	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.

Producer / feedlot assumptions

Item	Assumption
Equipment	
Equipment required per producer / feedlot	This figure is the average expected equipment requirements for producers / feedlots. The base assumption in the ABARES model was tested with the jurisdiction and updates were made to adjust the requirements to each state. The following items were considered for producers / feedlots: • Tag application device • Pocket reader • Central computer • Single-lane panel reader • Mobile dual panel reader • Reader calibration (flagged as optional) • Wand reader • Wireless • Project management services (flagged as optional) • Structural modification • Software (including training) The actual number of equipment required for each producer / feedlot was informed by the jurisdiction. The base assumptions were retained where no further comments were provided.
Equipment prices	This figure is informed by market price quotes provided by equipment suppliers and benchmarked against figures found in desktop research. The prices were provided to the jurisdictions for their review and the figures were updated where appropriate.
Optional equipment pieces	Items flagged with an optional percentage were informed by jurisdictions and other industry stakeholders from cost discussions.

Saleyard assumptions

Item	Assumption
Facility numbers	
Saleyard size categories (S/M/L)	Saleyard size categories are classified by annual throughput (small = <100,000, medium = 100,000-600,000 large = 600,000+). This was the categorisation used in the ABARES model and tested with stakeholders.
Number of saleyards	• The NSW figure was reviewed and validated by jurisdictional representatives on a costing discussion. • The QLD figure is sourced from the NLIS saleyard data 3 year average 2019-2021 and has been provided to the jurisdiction for review. • The SA and WA figures were provided by the jurisdictions. • The TAS figure was provided by the jurisdiction and is based on PIC data on the NLIS database.
Annual throughput of saleyards	• The NSW, QLD and SA figures are sourced from MLA saleyard data (2 years to 2019-20). • The TAS and WA figures were provided by the jurisdictions.
Contracting costs for small saleyards	A contractor fee was assumed for small saleyards due to the lower equipment requirement assumption. This figure was sourced from the ABARES model and tested with jurisdictions.
Equipment rollout for saleyards	
Equipment installation start date	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.
Equipment rollout timing (months)	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.

Saleyard assumptions

Item	Assumption
Equipment	
Equipment required per saleyard	This figure is the average expected equipment requirements for saleyards. The base assumption in the ABARES model was tested with the jurisdiction and updates were made to adjust the requirements to each state. The following items were considered for saleyards: • Central computer • Tag application device • Panel reader – 3-way auto drafter • Panel reader – 4-way auto drafter • Single lane stationary readers • Wand readers • Pocket readers • Software (including training) • Wireless • Tablets • Structural modifications • Project management services. The actual number of equipment required on each saleyard was informed by the jurisdiction. The base assumptions were retained where no further comments were provided.
Equipment prices	This figure is informed by market price quotes provided by equipment suppliers and benchmarked against figures found in desktop research. The prices were provided to the jurisdictions for their review and the figures were updated where appropriate.
Optional equipment pieces	Items flagged with a optional percentage were informed by jurisdictions and other industry stakeholders from cost discussions.

Processor assumptions

Item	Assumption
Facility numbers	
Processor size categories (S/M/L)	Processor size categories are classified by annual throughput (small = <100,000, medium = 100,000-600,000 large = 600,000+). This was the categorisation used in the ABARES model and tested with stakeholders.
Number of processors	• The NSW figure was reviewed and validated by jurisdictional representatives on a costing discussion. • The QLD figure is sourced from the NLIS saleyard data 3 year average 2019-2021 and has been provided to the jurisdiction for review. • The SA and WA figures were provided by the jurisdictions. • The TAS figure was provided by the jurisdiction and is based on PIC data on the NLIS database.
Equipment rollout for processors	
Equipment installation start date	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.
Equipment rollout timing (months)	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.

Processor assumptions

Item	Assumption
Equipment	
Equipment required per processor	This figure is the average expected equipment requirements for processors. The base assumption in the ABARES model was tested with the jurisdiction and updates were made to adjust the requirements to each state. The following items were considered for processors: • Central computer • Tag application device • Single-lane panel reader (installed) • Reader calibration • Wand readers • Holding paddock reader • Software (including training) • Wireless • Project management services. The actual number of equipment required for each processor was informed by the jurisdiction. The base assumptions were retained where no further comments were provided.
Equipment prices	This figure is informed by market price quotes provided by equipment suppliers and benchmarked against figures found in desktop research. The prices were provided to the jurisdictions for their review and the figures were updated where appropriate.
Optional equipment pieces	Items flagged with a optional percentage were informed by jurisdictions and other industry stakeholders from cost discussions.

Agent assumptions

Item	Assumption
Facility numbers	
Number of agents / CRCs	• The NSW figure was reviewed and validated by jurisdictional representatives on a costing discussion. • The QLD figure was sourced from the ABARES model and was provided to the jurisdiction for review. • The SA, TAS and WA figures were provided by the jurisdictions. While WA does not have individual agents, the figure of 15 is reflective 15 community CRC services that lend out equipment in WA.
Number of agencies	• The TAS and WA figures were provided by the jurisdictions. • No costs for agencies are assumed where jurisdictions have not indicated that this is required.
Equipment rollout for agents	
Equipment installation start date	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.
Equipment rollout timing (months)	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.
Equipment	
Equipment required per agent / agency	This figure is the average expected equipment requirements for agents / agencies. The base assumption in the ABARES model was tested with the jurisdiction and updates were made to adjust the requirements to each state. The following items were considered for agents and agencies: • Wands • Software (training and monitoring) (80% optional) • Mobile panel reader (agencies only) The actual number of equipment required for each agent / agency was informed by the jurisdiction. The base assumptions were retained where no further comments were provided.
Equipment prices	This figure is informed by market price quotes provided by equipment suppliers and benchmarked against figures found in deskt op research. The prices were provided to the jurisdictions for their review and the figures were updated where appropriate.
Optional equipment pieces	Items flagged with a optional percentage were informed by jurisdictions and other industry stakeholders from cost discussions .

Other facilities assumptions

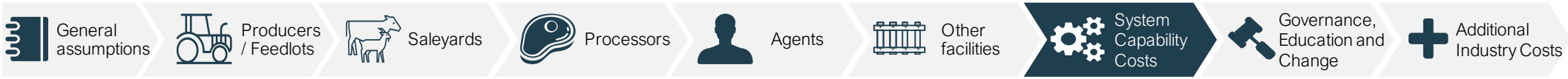
Item	Assumption
Facility numbers and type	
Facility type	Inclusive of agriculture shows, holding facilities, pounds / pens, export depots and depots identified by consultation with jurisdictions and industry representatives as requiring an equipment allocation.
Agriculture shows requiring equipment	The NSW, SA, TAS and WA figures are sourced from data provided by the jurisdictions.
Export / holding depots requiring equipment	The NSW, SA, TAS and WA figures are sourced from data provided by the jurisdictions.
Ports	The TAS figure is sourced from data provided by the jurisdiction.
Equipment rollout for other facilities	
Equipment installation start date	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.
Equipment rollout timing (months)	This date is sourced from the timeline that has been developed from consultations with key stakeholders and the SGTTF. The timeline maps out the anticipated start date and rollout timing of mandatory eID tagging for sheep and goats.

Other facilities assumptions

Item	Assumption
Equipment	
Equipment required on other facilities	This figure is the average expected equipment requirements for other facilities. The base assumption in the ABARES model was tested with the jurisdiction and updates were made to adjust the requirements to each state. The following items were considered for other facilities: • Central computer • Tag application device • Pocket reader • Single-lane panel reader (installed) (export facility only) • Mobile dual panel reader (export facility only) • Reader calibration (export facility only) • Wand readers (export facility only) • Wireless (export facility only) • Project management services (export facility only) • Structural modifications (export facility only) • Software (including training) The actual number of equipment required for each processor was informed by the jurisdiction. The base assumptions were retained where no further comments were provided.
Equipment prices	This figure is informed by market price quotes provided by equipment suppliers and benchmarked against figures found in desktop research. The prices were provided to the jurisdictions for their review and the figures were updated where appropriate.
Optional equipment pieces	Items flagged with a optional percentage were informed by jurisdictions and other industry stakeholders from cost discussions.

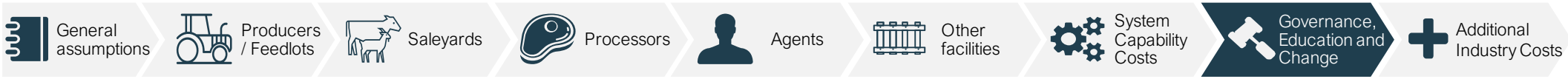
System capability cost assumptions

Item	Assumption
New system design and build	The cost of new system design and build to support eID implementation. This activity is sourced from consultation with Integrity Systems. The cost estimate is based on the estimated number of resources required to support these activities and uses FTE and blended rate as a proxy for cost with an administration allocation.
Platform change management and communications	The cost of a change project to support industry and government transition from the previous platform to the new requirements. This activity is sourced from consultation with Integrity Systems. The cost estimate is based on the estimated number of resources required to support these activities and uses FTE and blended rate as a proxy for cost.
Ongoing system hosting costs	The cost of on-going system maitenance. This activity is sourced from consultation with Integrity Systems. The cost estimate is based on an ongoing hosting cost and expanded use of the system.
Database customer support services	This is the cost of communications, stakeholder and customer support. This activity is sourced from consultation with Integrity Systems. The cost estimation is based on estimated resources required to support these activities.
Technology lead and project management	The cost of technology lead and management to oversee options, phased rollout and ownership of data assets. This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Tech & Data team. The cost estimate is based on the estimated number of additional government resources required to support these activities and uses FTE and blended rate as a proxy for cost.
Technology options and phased rollout	The cost of the development of technology options and phased rollout to support eID rollout. This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Tech & Data team. The cost estimate is based on the estimated number of additional government resources required to support these activities and uses FTE and blended rate as a proxy for cost.
Policies/processes on ownership of data assets	The cost of developing policies and processes that outline ownership of data assets. This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Tech & Data team. The cost estimate is based on the estimated number of additional government resources required to support these activities and uses FTE and blended rate as a proxy for cost.



Governance, education and change assumptions

Item	Assumption
Review existing governance arrangements	The cost of supporting and providing representation to the SGTTF for national governance arrangements. This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Policy & Process team and People & Change teams. The cost estimate is based on the estimated number of additional government resources required to support these activities and uses FTE and government salaries as a proxy for cost.
Updating legislation	The cost of legislative updates required to support eID implementation. This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Policy & Process team and People & Change teams. The estimate uses FTE and government salaries as a proxy for the cost estimate and the Victoria implementation cost as a benchmark.
Compliance and monitoring activities by jurisdictions	This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Policy & Process team and People & Change teams. The cost estimate is based on the estimated number of additional government resources required to support these activities and uses FTE and government salaries as a proxy for cost.
Communications and technical support	This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Policy & Process team and People & Change teams. The estimate uses FTE and government salaries as a proxy for the cost estimate and the Victoria implementation cost as a benchmark.
Education and training	This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Policy & Process team and People & Change teams. The estimate uses FTE and government salaries as a proxy for the cost estimate and the Victoria implementation cost as a benchmark.
Design of potential subsidies / grants	This activity was developed with government and industry stakeholders by the Livestock Traceability Co-Design Policy & Process team and People & Change teams. The estimate uses FTE and government salaries as a proxy for the cost estimate and the Victoria implementation cost as a benchmark.



Additional industry costs assumptions

Item	Assumption
Additional upskilling across the supply chain	The cost of training, education and upskilling across the supply chain needed for eID implementation. This activity is basedon the number of farms per state provided by jurisdictions, with the assumption that each farm has one farmer, and an estimation ofdays needed for additional upskilling sourced from industry and stakeholder consultation. The average annual income for livestockfarms from the Department of Agriculture, Fisheries and Forestry was used as a proxy.
Change support from industry associations	The total figure estimates the effort required by key industry associations that will provide leadership, communications andextension support throughout. This estimate uses an FTE assumption developed by key industry associations with an uplift and ongoing basis.