

# **Final report**

# **Feedbase Adoption Plan eLearning Project**

Project code:	L.FAP.1906
Prepared by:	Daniel Hickey and Zachary Kahl Morgan Rural Tech Ltd
Date published:	17 May 2021

PUBLISHED BY Meat & Livestock Australia Limited PO Box 1961 NORTH SYDNEY NSW 2059

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

This publication is published by Meat & Livestock Australia Limited ABN 39 081 678 364 (MLA). Care is taken to ensure the accuracy of the information contained in this publication. However MLA cannot accept responsibility for the accuracy or completeness of the information or opinions contained in the publication. You should make your own enquiries before making decisions concerning your interests. Reproduction in whole or in part of this publication is prohibited without prior written consent of MLA.

## Abstract

The eLearning project has delivered an interactive educational portal for the extension of Meat and Livestock Australia research project outputs. Participants can be guided with scaffolded learning, to effectively increase their comprehension, knowledge, and practical understanding of MLA research projects. The portal can be used to maximise adoption and execution of these learnings on farm, resulting in productive best practice across the industry. The outcome has been achieved by implementing systems that allow engaging content to be created and differentiated according to the learning needs of users. Analytics of user engagement with training packages and other content is collected to provide the basis of review and continuous improvement of the system.

## **Executive summary**

## Background

The aim of the eLearning project is to increase uptake and knowledge derived from MLA research project outputs. This project will create an online learning module that enhances the existing education and training resources by providing a method to 'activate' static education products, such as final reports, technical papers and large training manuals into an interactive eLearning tool to underpin the existing array of MLA user guides, technical documents and training products. In addition, the product will provide MLA capacity to review de-identified site analytics to improve its extension programs.

## Objectives

The core objectives of the project were:

- Delivery of an eLearning education model that enhances producers understanding gradually, using the information of MLA research projects outputs,
- A method to capture user login details and preferences for their future use and improved MLA reporting,
- A method that increases producers understanding, knowledge and implementation of MLA RDE&A across all levels of the market,
- Ability to activate external content into the modules via linking MLA tools and calculators,
- A feedback loop to allow continuous improvement of the system over time, Enhanced engagement information through the analysis of learner analytics.

#### Methodology

The project implemented a methodology that was to:

- Create or modify an existing MLA system to capture user information to better tailor information, tools and communications to them.
- Capture active participation, location, participation initial understanding and progressively checks for comprehension throughout the program.
- Collect and report end user for monitoring and evaluation of the uptake of research, and gaps in the extension and training matrix.
- Provide evidence that PGS learning outcomes are understood.

## **Results/key findings**

The elearning.mla.com.au website and system has been implemented and is able to achieve the core objectives. User uptake has been limited as MLA have expressed a desire for additional eModules to be added before its official launch. It is linked to the etools.mla.com.au tools and calculators. Morgan Rural Tech has undertaken to provide hosting support for an additional 12 months under the existing contract to align with the support requirements for etools.mla.com.au.

#### Benefits to industry

The eLearning ecosystem delivered in the project provides a comprehensive source of interactive learning and assessment tools available to the red meat industry in Australia. The structured content

delivery caters to producers of all knowledge levels in a way that has not been previously provided. Finally, the ability to monitor user engagement and extract analytics affords valuable insight into industry trends and behaviours that were inaccessible beforehand.

## Future research and recommendations

It is recommended to include training providers in the delivery of training packages where appropriate to increase user engagement, participation, understanding and implementation of research and development. It is suggested that this be achieved using a flipped or blended learning approach.

# Table of contents

Abstr	act	2
Execu	itive summary	3
1.	Background	6
2.	Objectives	6
3.	Methodology	6
	3.1 Project methodology	6
	3.1.1 Stage one	6
	3.1.2 Stage two	7
	3.2 Stakeholder Engagement and Prototyping	7
4.	Results	8
	4.1 eLearning Education Model and System	8
	4.2 Assessing user progression and system performance1	3
	4.3 MyMLA login and Extended User Profiles1	7
5.	Conclusion1	8
	5.1 Key findings1	8
	5.2 Benefits to industry1	8
6.	Future research and recommendations1	9
7.	References1	9

## 1. Background

The 2013-17 Feedbase Investment Plan (FIP) research teams developed comprehensive series of peer reviewed R&D reports outlining best practice management to address feed quality and quantity. These research outputs are currently static and do not engage all learning types within our industry. This project was initiated to pilot a method to 'activate' static education products, such as final reports, technical papers and large training manuals into an interactive eLearning tool to underpin the existing array of MLA user guides, technical documents and training products (MLA 2018).

In September 2018, a Terms of Reference (TOR) was distributed to multiple service providers and a call for tenders was initiated. The TOR detailed the background behind the intended project, a description of desired objectives and methodologies.

Tenders called for a project that aimed to create an online learning system that enhances the existing education and training resources supporting Profitable Grazing Systems (PGS) and other MLA extension programs. In addition, the product will provide MLA capacity to review de-identified site analytics to improve its extension programs.

On the 21st of November 2018 MLA advised Morgan Rural Tech Pty Ltd that their tender had been successful to deliver on the objectives of the project. The project was contracted and started in May 2019.

## 2. Objectives

Within the terms of reference, the contracted consultant was to provide:

- Delivery of an eLearning education model that enhances producers understanding gradually, using the information of MLA research projects outputs,
- A method to capture user login details and preferences for their future use and improved MLA reporting,
- A method that increases producers understanding, knowledge and implementation of MLA RDE&A across all levels of the market,
- Ability to activate external content into the modules via linking MLA tools and calculators,
- A feedback loop to allow continuous improvement of the system over time,
- Enhanced engagement information through the analysis of learner analytics.

## 3. Methodology

## 3.1 Project methodology

## 3.1.1 Stage one

- Meet with MLA and key stakeholders to develop a clear set of actions to improve the outcomes of this investment and establish an individual workplan for each tool.
- Provide MLA with a draft plan for the total of works required and timeframes to complete.
- Develop a prototype of each tool for comment and approval by MLA, key stakeholders and tools and calculator developers within the project objectives.

- Note: Prototype examples may be presented in a variety of means, though they must be interactive in a manner that the producer groups can easily understand and provide feedback.
- Work with the MLA project manager and FAP team to organise testing with a suitable range of end-users and address feedback as required and agreed.

## 3.1.2 Stage two

- Develop the final version of the tools and calculators, and MLA database interface.
- Test with prototype participants, MLA stakeholders and tool and calculator developers.
- Consolidate any final changes and activate online.
- Provide the methodology for ongoing maintenance.

## **3.2 Stakeholder Engagement and Prototyping**

Morgan Rural Tech met with stakeholders in Melbourne and Sydney during stage one to assess the MLA project outputs and developed a work plan for the implementation of the project. This included how content is related and other IT requirements such as the need for integration with the myMLA login. Prototypes were demonstrated at the meeting in Sydney as well as possible graphic designs and layouts.

To enable the final version of the website and systems Morgan Rural Tech implemented the following:

#### Server Provisioning and Hosting

- Provision a stand-alone server in a Sydney data centre for exclusive hosting of the elearning.mla.com.au and etools.mla.com.au websites
- Liaise with MLA to add Domain Name System (DNS) A records that point to the provisioned servers.
- Install Plesk hosting platform to allow a graphical user interface to manage the websites.
- Install custom firewall and geo-blocking software on the server to enhance security and reduce target area for attacks.
- Design and implement a backup and recovery strategy for the websites.
- Implement caching solution for site performance.
- Add a staging website for initial testing and a production website for code, content and functionality to be migrated to once complete.

#### Content Management System (CMS) and Learning Management System (LMS)

- Build a website utilising an open-source Content Management System (CMS) and add a Learning Management System (LMS) that can capture users learning.
- Create a content model that allowed training packages to be categorised into different stages of user learning. User's learning can be scaffolded by providing worked examples in tools linked to the content as well as providing support in workshops.
- Liaise with MLA and modify the website to integrate the myMLA login so that existing MLA users can use the site without creating new credentials.
- Add custom code and functionality to the CMS so that geographical zones can be created to allocate training packages to them.
- Add custom code to allow users to define location(s) relevant to them.

- Add geographical zones to training packages using the LMS.
- Filter content based on user's locations.
- Capture users PIC Registration and Flock Code# for further use in the profile section.
- Install Elementor content editor within Wordpress to allow users with little training to create and style content and training packages.
- Implement site analytics to understand how users are interacting with the content and associated tools to provide a feedback to assess which research & development is being engaged with and which needs further refinement for user interaction.
- Provide a custom page for access to the individual tools located at etools.mla.com.au.
- Provide custom reporting pages to export assessment and user data into excel for analysis.
- Activate online at the request of MLA.

#### Pilot eModule creation from MLA project outputs

- Morgan Rural Tech to add new content into the pilot system including soil testing, visual indicators of soil condition and Feedbase information across different learning areas of the content model.
- Create custom library page that displays training packages filtered and sorted by the categories introductory, intermediate, and advanced.
- Implement a custom theme and graphic design requested by MLA.

#### Provision of training and methodology for ongoing maintenance

- Provide training to MLA staff on the creation of new content, training packages and quizzes, including how to assign training packages to a zone and content level (i.e., Introductory).
- Provide hosting over the life of the project.

## 4. Results

## 4.1 eLearning Education Model and System

The eLearning educational model was designed to be relevant, engaging, visually appealing, scaffolded with supports such as tools and media and allow users to progress in their learning. To deliver on the task requirement "Create or modify an existing MLA system to capture user information to better tailor information, tools and communications to them" (MLA 2018), Morgan Rural Tech implemented a Content Management System (CMS) and Learning Management System (LMS) that meets these requirements and objectives.

The eLearning model is made up of training packages built from outputs of MLA research project outputs (Fig. 1). They integrate user assessments (quizzes) to provide feedback to users on their learning progression and integrate tools and interactive content for further learning and engagement.



### Figure 1 Training package introduction page

Users engage with the content and can see their progression through the training package. Throughout the training package topics, quizzes can be created to test users understanding (Fig. 2).



#### Figure 2 Training package in progress

Engagement with the eLearning system can come from multiple entry points; however, most users will come to the home page (Fig. 3) to start their learning progression.

#### Figure 3 Home page of the eLearning system



Training packages can be filtered and categorised (Fig. 4) to be relevant and at the users current learning progression. The first level is the introduction to the main points of the topic with the key

benefits or "hook" to increase engagement and uptake. The second level takes a guided learning approach where content is scaffolded, allowing the user to attempt examples of implementation and develop competency. The third level is focused on advanced learning and involves access to all detailed information, tools, and training.

Within the Content Management System (CMS), the library page was custom built to display training packages in the three levels. Administrators can assign a training package a level in the Learning Management System (LMS) and it will be displayed as shown in figure 4.

Library Tools & calcu	lators Events Information & FAQs		Q. Sign in
Library			
Q Search all training package	Introduction	In-depth	Advanced
Total Training Packages: 3	을 Establishing a new pasture 을 Soil testing 을 Visual indicators of soil condition	S Pasture Growth	Pasture Utilisation
Sheep Genetics	Introduction	In-depth	Advanced
Total Training Packages: 1			

## Figure 4 Training package content levels

To further categorise content by geographical locations, Administrators can create zones which are then related to training packages. This interface (Fig 5) was custom interface built within the CMS to map these geographical zones.





Finally, users can select one or more locations (Fig. 6) relevant to them and the training packages can be filtered to provide region specific content and materials. For example, if a training package was set for Southern NSW and a user had a location that intersected that mapped region, then the view can be filtered to only show training packages related to that area.

#### Figure 6 User location functionality



Users can search for addition content to further enhance their understanding of MLA research project outputs by using the search function within the CMS. Fig. 7 shows the output from a search on soil from within the system.

Library Tools & calculators Events Information & FAQs	Q Sign in
howing results for 'soil'	
Taking a soil test How do I know when to take a soil test? The best time to test is when there is some soil moisture, because it's easier	
Soil testing summary Soil testing is a management tool that gives a measure of soil fertility and conditions. Soil testing should be done once a year. It is	
Soil surface and clover roots Healthy soils are fundamental for healthy farming systems. This video is the last of three in a series that looks at common indicators of soil	

#### Figure 7 Search functionality of the CMS

## 4.2 Assessing user progression and system performance

Reports on user's progress and interaction with the system provides us with evidence to support if the eLearning education model implemented is enhancing producer understanding gradually using the information of MLA research project outputs. An example of a report that provides this evidence is shown in Fig. 8

Figure 8 User report with percentage completio
--

< < page 1/	101			Search Users	
	Use D	Ular	Progress		Completed On
0	99	Quarters A control • control of control or source	65%		
	71		6%		
•	105	jurth 4 cm 4 cm	47%		
0	102	johannellaiteg 4 constituine 4 constituine Discontinue	65%		
0	51	Appeland Collacion and A constitution of the second B constitution of the second	24%		
- · page 1/	101-				P Countral

Administrators can further drill down into a User's profile to assess completion and correct responses as in Fig. 9.

#### Figure 9 Detailed analysis of user results

You have	taken the following quizzes:
Test you	r knowledge: Breeding objective traits - 100% Statistics (edit) (remove)
Score 2 d	out of 2 question(s) . Points: 2/2 on March 19, 2021 4:33 pm
<u>Test you</u>	r knowledge: Breeding objective traits - 50% Statistics (edit) (remove)
Score 1 o	out of 2 question(s) . Points: 1/2 on March 19, 2021 4:32 pm
Test you	r knowledge: Breeding objective traits - 50% Statistics (edit) (remove)
Score 1 d	out of 2 question(s) . Points: 1/2 on March 19, 2021 4:30 pm
Test you	r knowledge: Breeding objective traits - 50% Statistics (edit) (remove)
Score 1 o	out of 2 question(s) . Points: 1/2 on March 19, 2021 4:29 pm
Test you	r knowledge: Breeding objective traits - 50% Statistics (edit) (remove)
	out of 2 question(s) . Points: 1/2 on March 19, 2021 4:26 pm
Test you	r knowledge: Breeding objective traits - 0% Statistics (edit) (remove)
Score 0 d	out of 2 question(s) . Points: 0/2 on March 19, 2021 4:24 pm
Test you	r knowledge: Choosing the right index - 100% Statistics (edit) (remove)
	out of 3 question(s) . Points: 3/3 on March 19, 2021 4:22 pm
Test you	r knowledge: Choosing the right index - 66.67% Statistics (edit) (remove)
and the state of the state of the	out of 3 question(s) . Points: 2/3 on March 19, 2021 4:22 pm

Administrators are also able to export all user assessments / quizzes (Fig. 10) and analyse in tools such as Excel.

#### Figure 10 Export functionality and output of user assessments / quizzes

di MAAntanting		near representation	nis.php?page+mla-reports						 <u>.</u>	
	O 15 # = + New 82	🔹 all magen 🖉	😨 Dekre Cache							
DeMound	MLA Reports									
a subscription and a	and the second se	_								
E LearnDash LMG	R User Quizes									
App Notifications	an a set of a set									
a set of the set of th										
MALocations	Export all users and their									
	manys wit supported, indude	es horr-								
MARports 4	logged in users:									
3 BucklyRens	Downson and	100000								
02000000	¥ 00	web at								
D helpack	1 million 1									
P Pesta										
Coon Meetings	man treat	Collection in a feature	P date	Khann Share-Sales		interior .	- Galabert Na	an life in the		
	approximation and app		Text your incominge - sincities welling	reprinted on finite subscription experiences in hour	19918	thut.	10140108	10		
3 Media	and the second s	and an approximate of	Test your knowledge - Animal welfare	rightfream on Kalleen vigorrightfream assertient end de Talver	14(38)	16.08	hoventie	111		
1000000	and the second s	and the design of the second	Text your incontextge - Annual earliers	-prodivation of the following to MDP School in The Surgical procedures		TROM	Tore the	111		
E Pages			Text your introducige - Smithal unaffaire	righterholt of the following is NOT loted in Thurseetaking of any f		10,30	Sevenite.	111		
l fages	and a second second second second	and the second s	Text your knowledge - Animal welflers	spratich of the following is told lated in th the use of pain relie	1914	1818	NOVEMBR	1.11		
	And a designed on the		Text your knowledge - Animal weffere Text your knowledge - Animal weffere	rigorialitists of this following is fold latent in Th the use of pairs rates rigorialitists of this following is fold listed in TA Association of the s	10.0	inut racid	November Rovertie	111		
	Antonio and	And Advantages of the second s	Text your knowledge - knowl welfare Text your knowledge - knowl welfare Text your knowledge - knowledge	operations of the following is too'd lotted in 'to the use of pain relief operations of the following is NOT lotted in To Associations of the in operation of their company aspecterized as from	196,0 146,00 196,0	1918 436,55 191,6	November Rovertie April 6, 30	103 103 494 (194,529,345,239		
Comments	Annales, etc.	100	Text provide stage - Annual welfare Text provide statutes - Annual avefure Text provide statutes - Annual welfare Text provide statutes - Annual welfare	sprathists of the following is fold faited in th the year of pain rated sprathists of the following is fold faited in the following end of the following is the sprathist experimental difference sprithes or faiter (group that experimental difference of faiter of faiter.)	1964 4463 1963 4463	inut racid	April 6, 20 April 6, 20	113 113 494 (p4.529.345.248 494 (p4.529.345.248		
Comments	Antonio and	And Advantages of the second s	Text your knowledge - knowl welfare Text your knowledge - knowl welfare Text your knowledge - knowledge	operations of the following is too'd lotted in 'to the use of pain relief operations of the following is NOT lotted in To Associations of the in operation of their company aspecterized as from	1964 446,56 1964 146,56 146,56	1918 436,55 196,95 146,55	November Rovertie April 6, 30	103 103 494 (194,529,345,239		
Comments			Ted pour terovénége arroral anthen Ted pour terovénége Arroral anthen Ted pour terovénége Arroral anthen Ted pour terovénége Arroral anthen Ted pour terovénége Arroral anthen	- constructs of the following in both latent in the two was of paint relation reproducing of the following in both latent in the latent and the in reproduce of following or plant asymptotic tables for an input track on following or plant asymptotic tables operations of the following in both tracks the following procedures;		HALE HALE HALE HALE	November November April 6, 20 April 6, 20 April 6, 20	1.1.5 1.1.5 494 (1)4.529.345.298 494 (1)4.529.345.298 494 (1)4.575.345.298		
Converts 2 Contact			Test provinces of the second welfare Test provinces the second welfare that provinces the second welfare	spectration of the following is tot? format or the two of pains rates spectration of the following is tot? Internal or the following of the is spectra or the second spectra or approximate of the is spectra or the second spectra expectement of the spectra or the second spectra expectement of the second spectra of the spe	******	1968 496,98 986,8 746,98 746,98 646,98	November Report & 20 April & 20 April & 20 April & 20 April & 20	111 111 494 (144,529,545,239 494 (144,529,545,239 494 (144,529,545,239		
Frages Convents S Contect D Elementer			Ted pay tenedetage annual vellera Ted pay tenedetage for pay antuktion	- spectration of the following a facility time in the three use of pains rated spectration of the following the DEE tables of the Second-area of the in- regretings at future of programmers as percented of a face spectration of the following the spectrament of the face spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectration of the following is DEE tables in the constrainting of any spectra is described as the constraint of the description of the spectra is description of the description of the spectra is description of the description of the description of the spectra is description of the de			November April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20	113 113 494 104128.06238 494 104128.06238 494 104128.06238 494 104128.06238		
Connects 9 Contact 9 Dementer			Ted por knowledge Anneal welfer Ted por knowledge Anneal welfer Keis por knowledge Anneal welfer Ted por knowledge Anneal welfer Ted por knowledge Anneal welfer Ted por knowledge Anneal welfer Ted por knowledge Anneal welfer	spontout or the following is full listed in No. The use of pairs ratio spontout or the following is fully listed in Tablacies and the spontout or following listed water approximated did. Note optimise in these (for update approximated did following optimises in the following is fully listed as the following optimises of the following is fully listed as the following optimises optimises of the following is fully listed as the following of any optimises of the following is fully listed as the following of any optimises of the following is following in the following of any optimises of the following is following in the following of any optimises of the following is following in the following of any following optimises of the following is followed in the following of any following optimises of the following is followed in the following of any following optimises of the following is followed in the following of any following optimises of the following is followed in the following of any following optimises of the following is followed in the following of any followed in the followed in t	1931 1932 1933 1935 1935 1935 1935 1935 1935	100 100 100 100 100 100 100 100 100 100	November Report 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20	111 112 444 (ph.)/h.365.244 444 (ph.)/h.365.244 444 (ph.)/h.365.244 444 (ph.)/h.365.244 444 (ph.)/h.365.244 444 (ph.)/h.365.244 444 (ph.)/h.366.244		
Converts 2 Contact			Test provi increadency a Annual valifiers Test provi increadency a Annual institute Test provi increadency a Annual institute Test provi increadency - Dia productive Test provi increadency - Dia productive Test provi increadency - Dia productive	-granitative stress forbinging in their facets in the low set of again conservation synahesis of the following is their facets of the Association of the a synahesis of the following (synahesis experimental disk from synahesis or following (synahesis experimental disk from synahesis of the following is both theorem is the following of and synahesis of the following is both theorem is the following of and synahesis of the following is both theorem is the following of and synahesis of the following is both theorem is the conservation of the synahesis of the following is both theorem is the conservation of the synahesis of the following is both theorem is the following is a synahesis many are invested in the following both of the both one provide the following is the both one of the both one provide the following both of the both one provide is the following both one of the both one provide the following both one of the provide the provide the provide the provide the following both one of the provide the provide the provide the following both one of the provide the provide the provide the following both one of the provide t		THE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRU	November April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 May 10, 20 Weight, 20 Weight, 20	103 103 404 (ph/2010.001.000 404 (ph/2010.000.000 404 (ph/2010.000.000 404 (ph/2010.000.000 404 (ph/2010.000.000 404 (ph/2010.000.000 404 (ph/2010.000.000 404 (ph/2010.000.000 404 (ph/2010.000.000 404 (ph/2010.000.000)		
Converts 2 Contact 2 Demontor			The pair transferge is small without the pair transferge is the pair/small. The pair transferge is the pair/small. The pair transferge is the pair/small.	spectrum of the following is the following in the following is the followi		THE TRUE STATE	No. 4 (10) No. 4 (10) April 6, (0) April	133 144 144 1541,201,016,200 404 1541,201,016,200 404 1541,201,016,200 404 1541,201,016,200 404 1541,201,016,200 404 1541,201,016,200 404 1541,201,016,200 404 1541,201,016,200 159 1501,201,201,200 159 1501,201,201,200 159 1501,201,201,200		
Consects Contact Dementor Completes			The point interacting in strand withing The point interacting in the postaleties The point interacting in the postaleties	-generations of the following is toget faced in 15 Marca and 26 Marca specialized on the following is toget faced in 16 Marca and 16 Marca specialized on the following is toget following in 16 Marca specialized on the following is toget following in 16 Marca specialized on the following is toget faced in 16 Marca specialized on the following is toget faced in 16 Marca specialized on the following is toget faced in 16 Marca (Marca Marca Mar	90.0 44.0 94.0 44.0 44.0 94.0 94.0 94.0		November Report 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 May 10, 20	111 112 494 (1)4.229.345.249 494 (1)4.229.345.249 494 (1)4.239.345.249 494 (1)4.229.345.249 494 (1)4.229.345.249 494 (1)4.259.345.249 494 (1)4.259.345.249 414 (1)4.249.345.249 129 (1)4.249.345.249 129 (1)4.249.345.249		
Converts 2 Contact 2 Demontor			The providence of the second and the Test providence of	speciation of the following is to be for a set of the set of a part of the set of a part of the set	99,0 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,000 44,00000000	Test Test Test Test Test Test Test Test	November November April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 May 10, 20	103 104 104 104 104 104 104 104 404 104 104 104 104 404 104 104 104 104 404 104 104 104 404 104 104 104 404 104 104 404 104 104 404 100 404 100 404 100 404 100 104 100 100 100 100 100 100 100 100 100 100		
Consects Contact Dementor Completes			The providence council and the The the	spectrum of the biological set by the biological set of the set of parameters of the spectrum of the biological set biological set of the spectrum of the set of spectrum of the biological set biological set of the spectrum of the set of the biological set of the biological set of the spectrum of the set of spectrum of the biological set biological set of the spectrum of the set of spectrum of the biological set biological set of the spectrum of the set of spectrum of the biological set biological set biological set of the spectrum of the set of spectrum of the biological set biological set biological set of the spectrum of the spectrum of the biological set biological set biological set of the spectrum of the spectrum of the biological set biological set biological set of the set of biological set of the biological set biological set biological set of the set of biological set of the biological set biological set of the set of spectrum of the biological set biological set biological set of the set of biological set of the biological set biological set of the set of spectrum of the biological set biological set biological set of the set of biological set of the biological set biological set of the set of biological set of the biological set biological set of the set of biological set of the biological set biological set of the set of biological set of the biological set biological set of the set of biological set of the biological set biological set of the set of biological set of biological set of the biological set	1913 1913 1913 1913 1914 1915 1914 1914 1914 1914 1914 1914	THE REAL PROPERTY IN THE PROPERTY INTERPROPERTY INTO PROPERTY	November Report 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 Minp 10, 21 Minp 10,	111 112 114 114 (101,101,101,101,101) 114 (101,101,101,101) 114 (101,101,101,101)		
Consenta 2 Contast 3 Dementor 3 Templates 4 Appearance			The pay is vanishing a count pattern The pay is vanishing a pay pattern The pay pattern pay pattern The pay pat	quadration of the Deficiency as by Deficients in TV: the set of gamma beam of the deficiency of the De		Test Page Page Page Page Page Page Page Page	November Report 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 May 10, 20 Nap 1	1.1. 1.1.1. 1.1.		
Consuenta Contact Demontor Templates			The part enabling - course particles The part is a course of the course particles The part is a course particles the	spectrum of the following is toget a toget a toget of the second of the		1968 48,00 96,00 196,000 196,000000000000000000000000000000000000	Non-cellen Repro-cellen Apro-6, 201 Apro-6, 201 Apro-6, 201 Apro-6, 201 Apro-6, 201 Rep-10, 20 Strep 10, 20 S	1.0. 1.0. 4.0. (24.12) a.01.201 4.0. (24.12) a.01.201 4.0. (24.12) a.01.201 4.0. (24.12) a.01.201 4.0. (24.12) a.01.201 4.0. (24.12) a.05.201 4.0. (24.12) a.05.201 4.0. (24.12) a.05.201 4.0. (24.12) a.05.201 4.0. (24.12) a.05.201 4.0. (24.12) a.05.201 4.0. (24.12) a.05.201 (24.10) a.01.001 a.01.201 (24.10) a.01.01 a.01.201 (24.10) a.01.201 a.01.201 (24.		
Consuents Contact Demontor Templates Appearance			The provide sector of the sect	-granitation of the following is toget faced in 10, 10, and 20, 20, 10, 20, 20, 20, 20, 20, 20, 20, 20, 20, 2		1968 48,00 98,000 98,0000 98,0000 98,0000 98,0000 98,0000000000	Non-celler Report 6, 20 April 6, 20 April 6, 20 April 6, 20 April 6, 20 May 10, 20 May 10, 20 May 10, 20 May 10, 20 May 10, 20 May 10, 21 May 1	1.0. 1.0. 4.0. (1)(-1,2.0.10)(-2.0. 4.0. (2)(-1,2.0.1)(-2.0. 4.0. (2)(-1,2.0.1)(-2.0. 4.0. (2)(-1,2.0.1)(-2.0. 4.0. (2)(-1,2.0.1)(-2.0. 4.0. (2)(-1,2.0.1)(-2.0.)(-		
Consuents Contact Demontor Templates Appearance			The part enumber of the sound arabies The part is a sound arabies the part of the sound ara	spectrum of the following the NDF latest in TV the second and parameters of the spectrum of the following the NDF latest in the NDF latest second of the spectrum of the theorem of the NDF latest second of the spectrum of the theorem of the NDF latest second of the spectrum of the theorem of the NDF latest second of the spectrum of the theorem of the NDF latest second of the spectrum of the theorem of the NDF latest second of the spectrum of the theorem of the NDF latest second of the spectrum of the theorem of the NDF latest second of the spectrum of the theorem of the NDF latest second of the NDF latest second of the theorem of the NDF latest second	1903 44,50 94,50 44,50 44,50 95,00 94,50 94,50 44,50 44,50 44,50 44,50 44,50 44,50 44,50 44,50 44,50 44,50 44,50 94,51 44,50 94,51,51 94,510,5100,5100,5100,5100000000000000000	1968 48,04 98,04,040,040,040,040,040,040,040,040,040	Non-relief Reproduces April 6, 201 April	10.1 10.1		
Connucts Contact Demontor Templates Appearance Pages () Uses			The providence is comparative transport endowers is comparative transport endowers transport endowers transport transport endowers transport endowers transport	spectrum of the following is toget faced in 10 MeV and 40 percent of the spectrum of the following is toget faced in 10 MeV and the following of the spectrum of the following is toget faced in 10 MeV and the following of the spectrum of the following is toget faced in 10 MeV and the following of the spectrum of the following is toget faced in 10 MeV and the following and spectrum of the following is toget faced in 10 MeV and the following and spectrum of the following is toget faced in 10 MeV and the following spectrum of the following is toget faced in 10 MeV and the following spectrum of the following is toget faced in 10 MeV and the following spectrum of the following is toget faced in the following spectrum of the following spectrum of the following is toget faced in the following spectrum of the following is toget faced in the following spectrum of the following is toget faced in the following spectrum of the following is toget toget toget spectrum of the following spectrum of the following is toget toget toget spectrum of the following spectrum of the following is toget toget toget spectrum of the following toget and the following is toget toget toget spectrum of the following toget and the following is toget toget toget spectrum of the following toget and the following is toget toget toget spectrum of the following toget and the following is toget toget toget and the following toget and the following is toget toget toget and the following toget and the following is toget toget toget toget and the following toget and the following is toget and the following toget and the following toget and the following is toget and the following toget and the following toget and the following is toget and the following toget and the following toget and the following is toget and the following toget and the following toget and the following toget and the following toget and the following toget and the following toget and the following toget and the following toget and the following toget and t	1001 44,000 44,00000000	HERE HERE	Non-erroller Report 6, 201 April 6, 201 April 6, 201 April 6, 201 April 6, 201 Mayo 10, 20 Mayo 10, 20	10.1 10.1		
Connents Contest Dementor Meganamor Pagenamor Pagena ()			Terr provinsinge - compression Terr provinsinger Terr provinsinger	spectrum of the following as toget faces in the spectra of the spectrum of the following as the following aso the following as the following a	1903 44,00 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,000 94,0000000000	Head Backet Haller Hall	Supervision Report 6, 201 April 6, 201 Step 10, 21 Step 10	10.1 10.1		
Connecto Contact Demontor Itempiates Appearance Pages () Uses			Test para la venderage - comp antères Test para la venderage - comp antères Test para la venderage - comp antères la para de la venderage - la para della venderage la para della venderage - la para della venderage - la para della venderage la para della venderage - la para della venderage - la para della venderage - la para della venderage la para della venderage - la para della	spectrum of the following is toget a toget a toget of the second of the		1963 28,03 196,04 196,0	Theorem Hand Report R, 2014 April R, 2014 April R, 2014 April R, 2014 April R, 2014 April R, 2014 April R, 2014 Strapp LD, 2014 Strap	10. 10. 10. 10. 10. 10. 10. 10.		
Connecto Contact Elementor Inequilities Appearance Plages () Users I Dates			Terr provi sensitivity of constrained the Terr provi sensitivity of terr provident Terr provi	spectrum of the following is toget faced in 10 Year and 20 years toget of the theorem of the following the followi	10.0 44.0 44.0 44.0 44.0 44.0 44.0 44.0	1968 48,54 18,55 1	Normalia Report A 20 April A 20 A	10.1 10.1		
Connecto Contact Demontor Immutans Appearance Plages () Uses			Terr provinsinge - compressioner Terr provinsinger Terr provinsinger	-generations of the following as toget faced in 15 MeV and 24 Januar 14 MeV -generations of the following as toget faced in 16 MeV and 24 MeV and 24 MeV -generations of the following as toget faced in 16 MeV and 24 MeV and 24 MeV -generations of the following as toget faced in 16 MeV and 24 MeV a		1963 28,03 196,04 196,0	Non-mile Report 6, 20 April 6,	10. 10. 10. 10. 10. 10. 10. 10.		
Connents Contact Inmentor Templem Acpearance Pages Uses Iools Settings			Terr provi sensitivity of constrained the Terr provi sensitivity of terr provident Terr provi	spectrum of the following is toget faced in 10 Year and 20 years toget of the theorem of the following the followi	10.0 44.0 44.0 44.0 44.0 44.0 44.0 44.0	1968 2023 2024 2024 2024 2024 2024 2024 2024	Normalia Report A 20 April A 20 A	10. 10. 10. 10. 10. 10. 10. 10.		
Convents Contast Dementor Iempärkes Acpearance Pagens Usen Tools			Terr provi sensingle - comp anthree Terr pro la sensing and terr pro l	-generations of these foreignees of the type family and the type of the type o		1968 62,01 98,01 98,02 98,03 98,00,000,000,000,000,000,000,000,000,00	Nacrossie Reproduce April 6, 20 April 6, 20 May 10, 20 April 6, 20 May 10, 20 May	10. 10. 10. 10. 10. 10. 10. 10.		

In addition, site analytics provide evidence to support engagement of the website in general. This combined with training package analytics provide by the LMS provide good feedback to assess what changes need to be made across the site. Fig. 11 provides an example of the site analytics showing what sections have been viewed.

2,500			
2,000 —			
1,500 —			
1,000 —			
500 —			-
0	Mar 2021	Apr 2021	May 2021
Top Post	s	Top Searche	25
175 View	/S	Sorry, nothi	ng to report.
<u>Library</u>			
57 Views			
Soil testi	-		
40 Views			
In the pa			
29 Views			
28 Views	<u>tory survey – vis</u>	ual in	
		ondit	
23 Views	dicators of soil c	onun	
	calculators		
20 Views			
		View all stats	

Figure 11 Site view by month and views by training *package* 

The eLearning system provides linkages to external content by providing a dedicated page for access to the tools and by linking directly in the training packages relevant to the external content. For example, Fig. 12 shows the dedicated Tools and Calculator page with Fig. 13 showing links to external content.

ls & Calculators		
CALCULATOR	TOOL	TOOL 2
	The second second	-
		E 1 2 2
1 1 1 1	1 1 1 1 1 1 1 1 1 1	
Annual and Annual and		8 8 8 8
		**
Stocking Rate Calculator	Phosphorus Tool	Pasture Trial Network
The stocking rate calculator is designed to determine	This tool is intended to assist falmers in determining	This tool allows you to assess and company the
the number of cattle or sheep you should put into a paddock based on its carrying capacity.	suitable levels of P-fertilisation of temperate pastures grazed by sheep and beet cattle on acid solis in	performance of more than 100 pasture varieties across the key pasture species for the red meat
		across the key pisture species for the red meat industry, including phallens, cockshot, tail teacue, perenvial and annual ryograss, sub-clover and
	grazed by sheep and beet cattle on acid polis in	scioss the key platture species for the red meat industry, including phalling, cocksition, tail teacue,
	grazed by sheep and beet cattle on acid polis in	across the key pisture species for the red meat industry, including phallens, cockshot, tail teacue, perenvial and annual ryograss, sub-clover and
	grazed by sheep and beet cattle on acid polis in	across the key pisture species for the red meat industry, including phallens, cockshot, tail teacue, perenvial and annual ryograss, sub-clover and
	grazed by sheep and beet cattle on acid polis in	across the key pisture species for the red meat industry, including phallens, cockshot, tail teacue, perenvial and annual ryograss, sub-clover and
	grazed by sheep and beet cattle on acid polis in	across the key pisture species for the red meat industry, including phallens, cockshot, tail teacue, perenvial and annual ryograss, sub-clover and
gaddock based on its carrying capacity.	grazed by sheep and beet cattle on acid solis in southern Australia.	scross the key plicture species for the net med industry, including plating, cocksister, still facture, personal and annual ryegrase, sub-clover and lucerose.
CALCULATOR	grazed by sheep and beet cattle on acid solis in southern Australia.	scross the key plicture species for the net med industry, including plating, cocksister, still facture, personal and annual ryegrase, sub-clover and lucerose.
CALCULATOR	grazed by sheep and beet cattle on acid solis in southern Australia.	scross the key plicture species for the net med industry, including plating, cocksister, still facture, personal and annual ryegrase, sub-clover and lucerose.
CALCULATOR	grazed by sheep and beet cattle on acid solis in touthern Australia.	CALCULATOR
CALCULATOR	grazed by sheep and beef cattle on acid solis in touthern Australia.	scross the key plicture species for the net med industry, including plating, cocksister, still facture, personal and annual ryegrase, sub-clover and lucerose.
paddock based on its carrying tapacity.	grazed by sheep and beef cattle on acid sola in touther Australia.	CALCULATOR

## Figure 12 Dedicated Tools and Calculator Page

Figure 13 Training packages that link to external resources



## 4.3 MyMLA login and Extended User Profiles

The elearning.mla.com.au has been integrated with myMLA authentication. This means that users that register on the MLA website and have a myMLA login can use the same credentials to sign-in to the eLearning site. Fig. 14 shows the authorisation screen users see when attempting to sign-in to the system.

#### Figure 14 User authentication using their myMLA login

my	mla	
Welcome to	o myMLA	
- Email address		
aproducer@produced	downs.com.au	
Password		
		0
Forgot password?		
Conti	nue	

The system has been modified to capture addition information such as a user's PIC registration and Flock Code enabling analysis of engagement with training packages and learning outcomes (Fig. 15).

MEAT & LINET DCK AUDITALIA	culators Events Information & FAQs	Qβ	
C Edit	Edit "Details" Information		
Profile photo	First Name (required)		
🖸 Cover photo	A	E	
	Public		
	Last Name (required)		
	Producer		
	Public Change		
	Nickname (required)		
	A Producer		
	Public		
	Where are you located?		
	Type in your address/location here		
	Dubbo		
	Public Change		
	PIC Registration		
	Public Change		
	Flock Code#		
	Enter in your Flock Code. If you have multiple codes, please separate them by a comma ",".		

Figure 15 Extended profile information to capture preferences, details for improved MLA reporting

## 5. Conclusion

The project has delivered the agreed objectives using an interactive educational portal and will continue to provide a training pathway for the extension of MLA project outputs. Participants are guided with scaffolded learning, to effectively increase their comprehension, knowledge, and practical understanding of MLA research projects. The portal provides an avenue for adoption and execution of these learnings on farm, resulting in productive best practice across the industry.

## 5.1 Key findings

The elearning.mla.com.au website and system has been implemented and is able to achieve the core objectives. User uptake has been limited as MLA have expressed a desire for additional eModules to be added before its official launch. It is linked to the etools.mla.com.au tools and calculators. Morgan Rural Tech has undertaken to provide hosting support for an additional 12 months under the existing contract to align with the support requirements for etools.mla.com.au.

## 5.2 Benefits to industry

The elearning.mla.com.au website uses a Content Management System (CMS) and Learning Management System (LMS) and will continue to provide a process for the extension of MLA project outputs in the future. Its functionality allows for integration with different modes of delivery such as flipped, online or blended learning. The sites analytics and reports allow for assessment of the delivery model to implement continuous improvement to the system.

## 6. Future research and recommendations

Online delivery alone in a self-paced environment suits some learners, but for many, they require interaction with peers or training providers. It is recommended that MLA investigate the use of this portal with a flipped or blended learning model. For the flipped learning model, producers could interact with content prior to a workshop allowing them to have some prior learning. Then at the workshops, learning objectives could be achieved with further scaffolding if required or more advanced concepts could be introduced and grasped. Additionally, the blended learning model (where producers and training providers interact over tele or video conferencing) allows live interaction. Where internet speeds allow, video conferencing would allow screen sharing and interaction with other producers helping with engagement and learning outcomes.

## 7. References

Meat & Livestock Australia Limited (MLA) (2018). Terms of Reference – Feedbase e-Learning modules Sep 2018.doc