

Balmoral 2016 Drop Classing Report

Overview of Professional and AMSEA Class

June 2025

Raw Data and Index

Introduction

The Balmoral site was hosted by Tuloona Pastoral and the Balmoral Breeders and was located on “Tuloona”, Harrow, Victoria. The site was one of five sites participating in the AWI-funded Merino Lifetime Productivity (MLP) Project which was facilitated by the Australian Merino Sire Evaluation Association.

2016 Drop - Key Assessments and Dates

The Balmoral 2016 drop ewes were the daughters of 25 industry sires, joined to a fine wool ewe base comprising one line of commercial ewes.

The 2016 drop were born in a very wet season and were monitored closely for growth and condition. The ewes were in good condition until OJD was diagnosed in early 2020. The ewes had been vaccinated with Gudair®, but a distinct tail was noted in the mob. The mortality rate remained within industry standards and is not expected to impact on the results.

Event	Date	Age Stage	Lactation Status	Age and Wool Growth
Birth	August 2016			
Post Weaning Assessment	May 2017	P	Dry	9 months, 9 months wool
Adult 2 Assessment	February 2018	A2	Dry	18 months, 9 months wool
<i>First Joining</i>	<i>March 2018</i>			
<i>Weaning</i>	<i>November 2018</i>			
Adult 3 Assessment	February 2019	A3	After weaning	2.5 years, 12 months wool
Adult 4	February 2020	A4	After weaning	3.5 years, 12 months wool
Adult 5	February 2021	A5	After weaning	4.5 years, 12 months wool
Adult 6	February 2022	A6	After weaning	5.5 years, 12 months wool

As per MLP protocol, the 2016 drop ewes were classed annually at each assessment for six years using two classing approaches – the AMSEA class (undertaken by David Whyte), and the Professional class (undertaken by Bill Walker).

Balmoral Site Breeding Objective: The goal is to select sheep that are productive and well-grown, with sound conformation and carrying heavy fine wool fleeces of good character, colour and nourishment suitable for the western Victorian environment.

Classing Methodology

Professional Class Process – Bill Walker

- Drop randomly presented, no measured performance is provided, animals classed to site breeding objective
- Classed 5 ways with reason for class recorded
 - Tops – Top 1% (Equivalent to sire selection or ET ewe)
 - Studs – Top 2–10% (Equivalent to special stud ewe selection)
 - 2nds – Top 10–70% (Equivalent to classed in ewe)

- Sales – Bottom 10–30% (Equivalent to sale ewe line)
- Culls – Bottom 10% (Equivalent to cull line)

AMSEA Grade Process – David Whyte

- Drop randomly presented, no data provided, animals classed to the site breeding objective
- Classed three ways: Top 25%, Flock 50%, Cull 25%

Glossary

Raw data is presented as lifetime performance. The ewes were shorn six times and joined four times.

- **Count or N** is the number of ewes in each grade that have full lifetime records used for reporting.
- **Average for ewes present at all 6 assessments:** **CFW** = Clean Fleece Weight, **FD** = fibre diameter (um), **SL** = staple length (mm), **SS** = staple strength (N/ktex), **FAT** = fat (mm), **EMD** = eye muscle depth (mm), **WT** = pre-joining weight (animals with 4 pre-joining records (kg)
- **WR** = raw number of lambs weaned (for ewes that were joined 4 times)
- **MP+** = within flock selection index, selects for sheep for a production system that has a balance of wool and surplus Merino sheep sales with balanced improvement of fleece weight and fibre diameter. The value reported is the final index produced from all data measured.
- **Visual Scores:** **Dag**=Dag, **Bdwr**=body wrinkle, **Char**=wool character, **Col**=wool colour, **Flrot**=fleece rot, **Dust**=dust penetration, **Back**=shoulder/back, **Legs**=Legs/feet, **Face**=face cover, **Spig**=non fibre pigmentation, **Jaw**=jaw structure.
- When referring to classing group, the words “class” and “grade” have been used interchangeably.

Raw data has also been expressed as **a deviation from average**, with CFW, WT and WR presented as percent (%) deviation from the lifetime average, and all other traits in their units of measurement (trait name plus “D”).

Sire ID	Sire name
601250–2007–707115	Centre Plus Poll, 707115
503884–2014–142194	GRASS, 142194 (R4)
510184–2014–141077	Glen Holme, 141077 (Dohne)
505069–2012–120012	Greendale, 120012
600240–2014–140345	Greenfields Poll, 140345
504188–2012–120366	Greenland, 2.366
600804–2012–120046	Hannaton Poll, 120046
500383–2011–003542	Hazeldean, 11.3542 (Hugh)
601138–2014–140757	Kiandra Poll, 140757
504170–2013–130519	Koorinal, 130519
504173–2013–SB5585	Kurra–Wirra, SB5585
600815–2009–090918	Leahcim Poll, 090918
501704–2012–UGB060	Melrose, 12UGB060
500063–2013–130389	Mumblebone, 130389
500063–2014–140026	Mumblebone, 140026
503298–2010–100919	Nerstane, 100919
503855–2010–100R56	One Oak No. 2, R56
601050–2009–090853	Stockman Poll, 090853 (Stilts)
600121–2012–122220	Terrick West Poll, 122220
504572–2011–ESA004	The Mountain Dam, 11/ESA004
500013–2011–110482	Trefusis, 110482
601053–2013–131026	Tuckwood Poll, 131026
601332–2012–120912	Wallaloo Park Poll, 120912
500412–2012–120175	Woodyarrup, 120175

Disclaimer

This publication contains raw data that has not been adjusted for factors that may improve its accuracy. It should only be used as a general aid and is not a substitute for specific advice. To the extent permitted by law, AWI and AMSEA exclude all liability for loss or damage arising from the use of the information in this publication. © 2025 Australian Wool Innovation Limited and Australian Merino Sire Evaluation Association Incorporated. All rights reserved.

Note that no statistical analysis has been completed.

Overview of Results Presented

The following classer results capture the performance by grade of the 2016 drop Balmoral ewes based on the Professional and AMSEA classing approaches.

The results for the Professional and AMSEA grade are initially packaged at the drop level and show average lifetime performance of animals based on their classer grades at each stage of classer assessment. Following the average performance tables, results show how the animals change in grades over time.

An appended report (page 14) evaluates the long-term productivity of ewes based on their first two AMSEA and Professional classer grades. By analysing the lifetime performance of animals designated as either 'retained (Top/Flock)' or 'removed (Cull)' during early assessments, the impact of early visual selection over the lifetime of the flock can be considered.

When comparing classer versus index selection, we recognise that some animals are allocated to lower classer grades based on a fault rather than their observed fleece or carcase performance. We also recognise that a classer is evaluating considerably more traits than the number of traits used to generate an index.

Factors to Consider:

- Good to recognise that OJD was diagnosed in this drop
- The Balmoral environment is unique – worms, rain, wind, and fox/kangaroos|disturb lambing

Best time to do an early Class (either Post Weaning or Adult) to select for Lifetime Performance:

- Professional – at the second assessment prior to first lamb
- AMSEA – at the second assessment prior to first lamb

Classers are selecting for:

- Professional – selecting for CFW, SL, WT, lower dag, dust, better wool colour character and lower fleece rot
- AMSEA – selecting for CFW, SL, WT, better character, colour, lower dust

Impact of ewe's reproduction status on classing:

- Professional – has impacted results particularly at later ages
- AMSEA – has impacted results

Change over time:

- Both approaches had good repeatability between classings (averaging above 50% repeatability)

AMSEA Class – Post Weaning to Adult 2 <ul style="list-style-type: none">• 48% stay in the same grade• 95% stay in the same or change by one grade• 5% of animals change by two grades	Professional Class – Post Weaning to Adult 2 <ul style="list-style-type: none">• 54% stay in the same grade• 96% stay in the same or change by one grade• 4% of animals change by two grades
AMSEA Class – Adult 2 to Adult 3 <ul style="list-style-type: none">• 54% stay in the same grade• 98% stay in the same or change by one grade• 2% of animals change by two grades	Professional Class – Adult 2 and Adult 3 <ul style="list-style-type: none">• 55% stay in the same grade• 96% stay in the same or change by one grade• 4% of animals change by two grades

Professional Classer Grade Results

Balmoral 2016 Drop – Professional Class – Bill Walker Measured LIFETIME Performance by Grade (Drop Level) –Average Lifetime CFW, FD, SL, SS, WT, EMD, WR, A6 MP+ Index - followed by Average Lifetime Scored Dag, Bdwr, Char, Col, Flrot, Dust, Back, Legs, Face, Spig, Jaw

<i>Age: 9m Wool: 9m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance								
Post Weaning Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D	
Top	12	3.4	17.2	96	38	50	3.1	22	3.5	105	114	0.5	10.5	1.1	107	0.1	0.5	87	4.3	
Stud	87	3.1	16.7	90	38	48	3.1	21	4.4	102	103	-0.1	3.7	1.4	103	0.1	0.3	109	1.4	
Seconds	297	3.0	16.7	86	37	47	3.1	21	4.1	101	99	0.0	0.7	0.1	101	0.0	0.2	103	0.0	
Sale	185	3.0	16.7	84	36	46	2.9	21	3.9	100	100	0.0	-2.2	-0.5	98	-0.1	-0.2	98	-0.4	
Cull	50	2.9	16.5	81	36	43	2.9	20	3.1	98	96	-0.2	-4.5	-1.1	94	-0.1	-1.1	77	-2.7	
Total/Ave	631	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101	
<i>Diff Top to Bottom</i>											<i>18</i>	<i>0.7</i>	<i>15.0</i>	<i>2.1</i>	<i>14</i>	<i>0.2</i>	<i>1.6</i>	<i>9</i>	<i>7</i>	

<i>Age: 9m Wool: 9mths</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Post Weaning Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	12	1.9	2.5	2.1	2.3	1.2	2.0	1.1	2.4	2.7	2.4	1.0
Stud	87	2.0	2.4	2.4	2.3	1.3	2.3	1.1	2.1	2.7	2.1	1.0
Seconds	297	2.0	2.6	2.6	2.3	1.3	2.4	1.1	2.1	2.8	2.1	1.0
Sale	185	2.0	2.7	2.7	2.4	1.5	2.6	1.2	2.1	2.8	2.0	1.0
Cull	50	2.3	2.6	2.7	2.4	1.6	2.6	1.2	2.2	2.8	2.0	1.0
Total/Ave	631	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>-0.4</i>	<i>-0.2</i>	<i>-0.6</i>	<i>-0.2</i>	<i>-0.4</i>	<i>-0.5</i>	<i>-0.2</i>	<i>0.2</i>	<i>-0.1</i>	<i>0.4</i>	<i>0.0</i>

<i>Age: 20m Wool: 9m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance								
Adult 2 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D	
Top	5	3.2	16.7	95	37	51	2.9	23	5.0	113	107	0.0	8.9	0.1	111	-0.1	1.6	124	11.9	
Stud	53	3.1	16.6	91	37	49	3.2	22	4.3	102	102	-0.1	4.9	0.4	105	0.2	0.5	106	1.5	
Seconds	333	3.0	16.7	87	37	47	3.0	21	4.1	102	101	0.0	1.2	0.5	101	0.0	0.2	101	0.9	
Sale	199	3.0	16.8	84	36	46	2.9	21	4.0	100	99	0.1	-2.1	-0.7	98	-0.1	-0.2	99	-0.9	
Cull	46	2.9	16.3	80	36	43	2.9	20	3.4	96	97	-0.4	-6.1	-1.2	93	-0.1	-0.8	85	-5.4	
Total/Ave	636	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101	
<i>Diff Top to Bottom</i>											<i>10</i>	<i>0.4</i>	<i>15.0</i>	<i>1.4</i>	<i>18</i>	<i>0.0</i>	<i>2.4</i>	<i>39</i>	<i>17</i>	

<i>Age: 20m Wool: 9m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 2 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	5	2.3	2.3	2.1	2.0	1.2	2.1	1.0	2.1	2.5	2.2	1.0
Stud	53	1.9	2.5	2.2	2.2	1.1	2.2	1.2	2.1	2.7	2.2	1.0
Seconds	333	2.0	2.6	2.6	2.3	1.3	2.4	1.1	2.0	2.8	2.0	1.0
Sale	199	2.1	2.6	2.8	2.5	1.5	2.6	1.2	2.1	2.8	2.0	1.0
Cull	46	2.1	2.8	2.6	2.5	1.6	2.5	1.2	2.2	2.8	2.2	1.1
Total/Ave	636	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.2</i>	<i>-0.5</i>	<i>-0.5</i>	<i>-0.4</i>	<i>-0.4</i>	<i>-0.4</i>	<i>-0.2</i>	<i>-0.1</i>	<i>-0.3</i>	<i>0.0</i>	<i>-0.1</i>

<i>Age: 2.5y Wool: 12m</i>		Raw Data - Average LT Performance									Raw Data - Deviation from Average LT Performance								
Adult 3 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D
Top	7	3.5	16.8	96	38	53	3.1	22	3.9	110	115	0.1	9.9	0.7	115	0.0	0.9	96	9.3
Stud	53	3.3	16.9	91	37	49	3.1	22	3.9	106	108	0.2	5.0	0.4	106	0.1	0.5	96	5.0
Seconds	351	3.1	16.7	87	37	47	3.0	21	4.1	102	101	0.0	1.0	0.5	101	0.0	0.0	101	1.4
Sale	182	2.9	16.9	84	37	45	3.0	21	4.1	97	97	0.2	-2.3	-0.3	97	0.0	-0.1	101	-3.5
Cull	42	2.7	16.0	79	34	44	3.0	21	4.0	97	89	-0.7	-6.8	-3.2	95	-0.1	-0.4	99	-4.2
Total/Ave	635	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101
<i>Diff Top to Bottom</i>		<i>25</i>	<i>0.8</i>	<i>16.7</i>	<i>3.9</i>	<i>20</i>	<i>0.1</i>	<i>1.4</i>	<i>-4</i>	<i>13</i>									

<i>Age: 2.5y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 3 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	7	2.5	2.5	2.3	2.0	1.2	1.9	1.1	2.3	2.9	3.0	1.0
Stud	53	2.2	2.6	2.3	2.2	1.3	2.2	1.1	2.0	2.7	2.3	1.0
Seconds	351	2.0	2.6	2.6	2.3	1.3	2.4	1.1	2.0	2.8	1.9	1.0
Sale	182	2.0	2.7	2.8	2.4	1.4	2.6	1.1	2.2	2.8	2.1	1.0
Cull	42	1.9	2.5	2.5	2.7	1.7	2.4	1.2	2.3	2.8	2.1	1.1
Total/Ave	635	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.6</i>	<i>0.0</i>	<i>-0.3</i>	<i>-0.7</i>	<i>-0.4</i>	<i>-0.5</i>	<i>-0.1</i>	<i>0.0</i>	<i>0.1</i>	<i>0.9</i>	<i>-0.1</i>

<i>Age: 3.6y Wool: 12m</i>		Raw Data - Average LT Performance									Raw Data - Deviation from Average LT Performance								
Adult 4 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D
Top	7	3.7	16.7	94	34	51	3.0	22	3.4	115	122	0.0	8.1	-2.4	110	0.0	0.4	85	13.8
Stud	144	3.2	16.7	90	36	48	3.1	21	3.8	104	106	0.0	4.1	-0.4	104	0.1	0.3	94	3.2
Seconds	308	3.0	16.7	85	38	47	3.0	21	4.1	101	99	0.0	-0.6	1.0	100	0.0	0.0	101	0.3
Sale	160	2.9	16.8	84	36	45	2.9	21	4.2	97	96	0.1	-2.3	-1.3	97	-0.1	-0.2	104	-3.5
Cull	16	2.7	16.4	78	35	42	3.0	20	3.9	96	90	-0.4	-7.7	-1.8	91	0.0	-0.9	96	-5.2
Total/Ave	635	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101
<i>Diff Top to Bottom</i>											32	0.3	15.8	-0.6	19	0.0	1.2	-11	19

<i>Age: 3.6y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 4 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	7	2.6	3.1	2.3	2.1	1.1	1.8	1.1	2.2	2.7	2.3	1.0
Stud	144	2.0	2.6	2.4	2.3	1.3	2.3	1.1	2.1	2.8	2.1	1.0
Seconds	308	2.0	2.6	2.6	2.3	1.3	2.5	1.2	2.0	2.7	2.1	1.0
Sale	160	2.0	2.6	2.8	2.5	1.5	2.6	1.2	2.2	2.8	2.1	1.0
Cull	16	2.2	2.6	2.6	2.6	1.5	2.6	1.2	2.4	2.8	1.7	1.0
Total/Ave	635	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		0.4	0.5	-0.3	-0.5	-0.4	-0.8	0.0	-0.2	-0.1	0.6	0.0

<i>Age: 4.6y Wool: 12m</i>		Raw Data - Average LT Performance									Raw Data - Deviation from Average LT Performance								
Adult 5 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D
Top	5	3.7	16.1	88	36	50	3.1	21	4.2	117	123	-0.6	2.2	-0.9	108	0.0	0.2	104	16.5
Stud	120	3.2	16.7	89	38	49	3.1	22	4.0	105	105	0.0	3.2	0.6	105	0.1	0.5	98	4.5
Seconds	342	3.0	16.7	86	37	46	3.0	21	4.0	101	100	0.0	0.1	0.2	100	0.0	0.0	100	-0.3
Sale	146	2.9	16.8	84	36	45	2.9	21	4.0	98	96	0.0	-2.3	-0.7	97	-0.1	-0.4	100	-2.8
Cull	23	2.8	16.6	82	35	43	2.9	20	4.6	96	92	-0.1	-3.4	-2.1	93	-0.2	-0.8	114	-4.9
Total/Ave	636	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101
<i>Diff Top to Bottom</i>											31	-0.5	5.6	1.2	15	0.2	1.0	-9	21

<i>Age: 4.6y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 5 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	5	2.3	2.9	1.8	2.0	1.2	1.9	1.2	1.9	2.7	1.8	1.0
Stud	120	2.1	2.6	2.3	2.2	1.2	2.3	1.1	2.0	2.8	2.1	1.0
Seconds	342	2.0	2.6	2.7	2.3	1.3	2.5	1.1	2.0	2.8	2.0	1.0
Sale	146	2.0	2.6	2.7	2.5	1.5	2.5	1.2	2.2	2.8	2.1	1.0
Cull	23	2.1	2.5	2.7	2.7	1.6	2.5	1.2	2.5	2.8	1.9	1.1
Total/Ave	636	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.3</i>	<i>0.4</i>	<i>-0.9</i>	<i>-0.7</i>	<i>-0.4</i>	<i>-0.6</i>	<i>-0.1</i>	<i>-0.6</i>	<i>-0.1</i>	<i>-0.1</i>	<i>-0.1</i>

<i>Age: 5.6y Wool: 12m</i>		Raw Data - Average LT Performance									Raw Data - Deviation from Average LT Performance								
Adult 6 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D
Top	6	3.4	16.4	90	33	51	3.1	21	3.1	111	113	-0.3	4.6	-3.7	109	0.1	0.1	78	10.3
Stud	82	3.1	16.7	89	37	49	3.1	22	4.0	107	104	-0.1	3.6	-0.1	105	0.1	0.6	99	6.2
Seconds	342	3.0	16.7	86	37	47	3.0	21	4.1	101	101	0.0	0.3	0.5	100	0.0	0.0	100	0.0
Sale	169	3.0	16.8	85	36	45	2.9	21	4.0	98	98	0.1	-1.2	-0.8	98	-0.1	-0.2	100	-3.4
Cull	37	2.8	16.5	80	37	44	3.0	21	4.2	100	93	-0.2	-5.6	-0.4	96	0.0	-0.7	104	-0.5
Total/Ave	636	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101
<i>Diff Top to Bottom</i>		<i>20</i>	<i>-0.1</i>	<i>10.2</i>	<i>-3.3</i>	<i>13</i>	<i>0.1</i>	<i>0.7</i>	<i>-26</i>	<i>11</i>									

<i>Age: 5.6y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 6 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	6	2.2	2.9	2.3	2.3	1.1	2.1	1.1	2.4	2.9	2.1	1.0
Stud	82	2.0	2.5	2.3	2.2	1.3	2.2	1.1	2.0	2.7	2.1	1.0
Seconds	342	2.0	2.6	2.6	2.3	1.3	2.5	1.1	2.0	2.8	2.0	1.0
Sale	169	2.1	2.6	2.8	2.5	1.4	2.6	1.2	2.3	2.8	2.1	1.0
Cull	37	2.0	2.5	2.6	2.5	1.4	2.4	1.2	2.3	2.8	2.1	1.1
Total/Ave	636	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.2</i>	<i>0.4</i>	<i>-0.3</i>	<i>-0.1</i>	<i>-0.3</i>	<i>-0.4</i>	<i>-0.1</i>	<i>0.1</i>	<i>0.1</i>	<i>0.0</i>	<i>-0.1</i>

**Balmoral 2016 Drop – Professional Grade
Change Between Grade & Next Grade – Walker**

	Grade	Adult 2					
		Top	Stud	2nd	Sale	Cull	Total
Post Weaning	Top	3	6	3			12
	Stud	1	31	48	5	2	87
	2nd	1	14	197	80	6	298
	Sale		2	75	90	18	185
	Cull			8	22	20	50
	Total		5	53	331	197	46
54% stayed the same							
	Grade	Adult 3					
		Top	Stud	2nd	Sale	Cull	Total
Adult 2	Top	2	3				5
	Stud	1	12	36	4		53
	2nd	4	36	222	64	4	330
	Sale		2	77	97	21	197
	Cull		1	12	16	17	46
	Total		7	54	347	181	42
55% stayed the same							
	Grade	Adult 4					
		Top	Stud	2nd	Sale	Cull	Total
Adult 3	Top	2	4		1		7
	Stud	3	33	17	1		54
	2nd	1	85	204	54	2	346
	Sale	1	16	75	84	5	181
	Cull		6	8	19	9	42
	Total		7	144	304	159	16
53% stayed the same							
	Grade	Adult 5					
		Top	Stud	2nd	Sale	Cull	Total
Adult 4	Top	1	3		3		7
	Stud	2	59	70	11	2	144
	2nd	2	55	193	51	4	305
	Sale		2	75	73	9	159
	Cull			1	7	8	16
	Total		5	119	339	145	23
53% stayed the same							
	Grade	Adult 6					
		Top	Stud	2nd	Sale	Cull	Total
Adult 5	Top	1	3	1			5
	Stud	2	48	61	6	2	119
	2nd	2	27	224	78	9	340
	Sale	1	3	52	74	15	145
	Cull			2	10	11	23
	Total		6	81	340	168	37
57% stayed the same							

**Balmoral 2016 Drop – Professional Grade
Change Between Each Grade & Adult 6 –Walker**

	Grade	Adult 6					
		Top	Stud	2nd	Sale	Cull	Total
Post Weaning	Top	1	4	6	1		12
	Stud	1	22	41	21	2	87
	2nd	3	38	181	63	13	298
	Sale	1	16	96	58	14	185
	Cull		1	16	25	8	50
	Total		6	81	340	168	37
43% stayed the same							
	Grade	Adult 6					
		Top	Stud	2nd	Sale	Cull	Total
Adult 2	Top		3	2			5
	Stud	2	18	25	7	1	53
	2nd	4	46	196	74	11	331
	Sale		13	102	67	15	197
	Cull		1	15	20	10	46
	Total		6	81	340	168	37
46% stayed the same							
	Grade	Adult 6					
		Top	Stud	2nd	Sale	Cull	Total
Adult 3	Top		4	1	1	1	7
	Stud	1	23	21	8	1	54
	2nd	4	49	218	69	7	347
	Sale	1	4	89	71	16	181
	Cull		1	10	19	12	42
	Total		6	81	339	168	37
51% stayed the same							
	Grade	Adult 6					
		Top	Stud	2nd	Sale	Cull	Total
Adult 4	Top	2	3	1		1	7
	Stud	3	44	77	16	4	144
	2nd	1	33	191	68	12	305
	Sale		1	66	77	15	159
	Cull			4	7	5	16
	Total		6	81	339	168	37
51% stayed the same							
	Grade	Adult 6					
		Top	Stud	2nd	Sale	Cull	Total
Adult 5	Top	1	3	1			5
	Stud	2	48	61	6	2	119
	2nd	2	27	224	78	9	340
	Sale	1	3	52	74	15	145
	Cull			2	10	11	23
	Total		6	81	340	168	37
57% stayed the same							

AMSEA Classer Grade Results

Balmoral 2016 Drop – AMSEA Grade – David Whyte Measured LIFETIME Performance by Grade (Drop Level) –Average Lifetime CFW, FD, SL, SS, WT, EMD, WR, A6 MP+ Index - followed by Average Lifetime Scored Dag, Bdwr, Char, Col, Flrot, Dust, Back, Legs, Face, Spig, Jaw

<i>Age: 9m Wool: 9m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance								
Post Weaning Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D	
Top	212	3.1	16.8	88	38	47	3.0	21	4.1	102	103	0.1	2.6	1.1	102	0.0	0.1	102	0.8	
Flock	292	3.0	16.7	85	37	47	3.0	21	4.1	101	99	0.0	-0.4	-0.1	100	0.0	0.0	101	0.0	
Cull	132	2.9	16.6	82	35	45	2.9	21	3.8	99	97	-0.1	-3.3	-1.5	97	-0.1	-0.3	94	-1.6	
Total/Ave	636	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101	
<i>Diff Top to Bottom</i>											5	0.2	6.0	2.6	5	0.1	0.4	8.3	2	

<i>Age: 9m Wool: 9m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Post Weaning Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	212	2.0	2.6	2.5	2.2	1.2	2.3	1.1	2.1	2.8	2.1	1.0
Flock	292	2.0	2.6	2.7	2.3	1.3	2.5	1.2	2.1	2.8	2.0	1.0
Cull	132	2.1	2.6	2.7	2.5	1.6	2.6	1.2	2.1	2.8	2.0	1.0
Total/Ave	636	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		-0.1	0.0	-0.2	-0.3	-0.4	-0.3	0.0	0.0	0.0	0.2	0.0

<i>Age: 20m Wool: 9m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance								
Adult 2 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D	
Top	136	3.2	16.6	89	38	48	3.1	21	4.2	105	106	-0.1	3.4	1.1	102	0.1	0.2	103	3.6	
Flock	268	3.0	16.9	87	38	47	3.0	21	4.0	101	100	0.2	1.1	0.7	100	0.0	0.0	99	-0.3	
Cull	231	2.9	16.6	82	35	46	3.0	21	4.0	99	96	-0.1	-3.3	-1.4	98	0.0	-0.2	99	-1.8	
Total/Ave	635	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101	
<i>Diff Top to Bottom</i>											9	0.0	6.8	2.5	4	0.1	0.3	4.6	5	

<i>Age: 20m Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 2 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	136	2.1	2.7	2.4	2.1	1.2	2.2	1.1	2.0	2.7	2.1	1.0
Flock	268	2.0	2.6	2.6	2.3	1.3	2.5	1.1	2.1	2.7	2.0	1.0
Cull	231	2.0	2.6	2.7	2.5	1.5	2.6	1.2	2.1	2.8	2.0	1.0
Total/Ave	635	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.1</i>	<i>0.1</i>	<i>-0.4</i>	<i>-0.4</i>	<i>-0.3</i>	<i>-0.4</i>	<i>0.0</i>	<i>-0.1</i>	<i>-0.1</i>	<i>0.1</i>	<i>0.0</i>

<i>Age: 2.5y Wool: 12m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance							
Adult 3 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D
Top	133	3.3	16.7	90	38	47	3.0	21	3.9	105	108	0.0	4.3	0.7	102	0.0	0.0	97	3.6
Flock	364	3.0	16.8	86	38	47	3.0	21	4.0	101	100	0.1	0.4	0.7	100	0.0	0.0	100	0.2
Cull	138	2.8	16.4	80	34	46	3.0	21	4.1	97	92	-0.3	-5.4	-2.5	98	0.0	0.1	103	-4.1
Total/Ave	635	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101
<i>Diff Top to Bottom</i>		<i>16</i>	<i>0.3</i>	<i>9.8</i>	<i>3.2</i>	<i>4</i>	<i>0.0</i>	<i>-0.1</i>	<i>-5.4</i>	<i>8</i>									

<i>Age: 2.5y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 3 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	133	2.1	2.7	2.4	2.2	1.3	2.2	1.2	2.0	2.8	2.1	1.0
Flock	364	2.0	2.6	2.6	2.3	1.3	2.5	1.1	2.1	2.8	2.1	1.0
Cull	138	2.0	2.5	2.7	2.6	1.6	2.6	1.2	2.2	2.8	2.0	1.0
Total/Ave	635	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.2</i>	<i>0.2</i>	<i>-0.3</i>	<i>-0.4</i>	<i>-0.3</i>	<i>-0.4</i>	<i>0.0</i>	<i>-0.1</i>	<i>0.0</i>	<i>0.1</i>	<i>0.0</i>

<i>Age: 3.5y Wool: 12m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance							
Adult 4 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D
Top	191	3.2	16.7	89	37	48	3.1	21	4.0	103	105	0.0	3.0	0.1	103	0.1	0.1	100	2.5
Flock	315	3.0	16.8	86	38	46	3.0	21	4.0	101	101	0.1	0.0	0.8	99	0.0	0.0	99	0.0
Cull	130	2.7	16.5	81	35	45	3.0	21	4.2	97	91	-0.2	-4.5	-2.0	96	0.0	-0.1	104	-3.7
Total/Ave	636	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101
<i>Diff Top to Bottom</i>		<i>14</i>	<i>0.2</i>	<i>7.5</i>	<i>2.1</i>	<i>7</i>	<i>0.1</i>	<i>0.3</i>	<i>-3.8</i>	<i>6</i>									

<i>Age: 3.5y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 4 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	191	2.1	2.7	2.4	2.2	1.3	2.2	1.2	2.1	2.8	2.0	1.0
Flock	315	2.1	2.6	2.7	2.3	1.3	2.5	1.1	2.1	2.8	2.1	1.0
Cull	130	1.9	2.4	2.8	2.6	1.5	2.7	1.2	2.2	2.7	2.0	1.0
Total/Ave	636	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.2</i>	<i>0.3</i>	<i>-0.4</i>	<i>-0.4</i>	<i>-0.2</i>	<i>-0.5</i>	<i>0.0</i>	<i>-0.1</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>

<i>Age: 4.5y Wool: 12m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance							
Adult 5 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D
Top	178	3.2	16.6	89	37	47	3.0	21	3.9	105	105	-0.1	2.9	0.6	102	0.0	0.1	98	3.6
Flock	298	3.0	16.8	85	37	47	3.0	21	4.0	100	100	0.1	-0.3	0.2	100	0.0	0.0	100	-0.5
Cull	160	2.9	16.7	83	36	46	3.0	21	4.1	98	95	0.0	-2.6	-1.1	98	0.0	0.0	103	-3.1
Total/Ave	636	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101
<i>Diff Top to Bottom</i>		<i>10</i>	<i>-0.1</i>	<i>5.5</i>	<i>1.7</i>	<i>4</i>	<i>0.0</i>	<i>0.1</i>	<i>-4.9</i>	<i>7</i>									

<i>Age: 4.5y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 5 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	178	2.1	2.7	2.4	2.2	1.2	2.2	1.1	2.0	2.7	2.0	1.0
Flock	298	2.0	2.6	2.7	2.3	1.4	2.5	1.2	2.1	2.8	2.0	1.0
Cull	160	2.0	2.5	2.7	2.6	1.5	2.6	1.1	2.2	2.8	2.1	1.0
Total/Ave	636	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		<i>0.1</i>	<i>0.2</i>	<i>-0.4</i>	<i>-0.4</i>	<i>-0.3</i>	<i>-0.4</i>	<i>0.0</i>	<i>-0.2</i>	<i>-0.1</i>	<i>0.0</i>	<i>0.0</i>

<i>Age: 5.5y Wool: 12m</i>		Raw Data - Average LT Performance										Raw Data - Deviation from Average LT Performance								
Adult 6 Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+	CFW%	FDD	SLD	SSD	WT%	FATD	EMDD	WR%	MP+D	
Top	155	3.2	16.6	88	37	48	3.1	21	3.7	104	106	-0.1	2.1	0.1	103	0.0	0.0	92	3.2	
Flock	335	3.0	16.8	86	37	46	3.0	21	4.2	101	100	0.1	0.1	0.6	100	0.0	0.1	103	-0.2	
Cull	146	2.8	16.6	83	35	45	3.0	21	4.1	98	94	-0.1	-2.5	-1.4	97	0.0	-0.1	102	-2.9	
Total/Ave	636	3.0	16.7	86	37	47	3.0	21	4.0	101	3.0	16.7	86	37	47	3.0	21	4.0	101	
<i>Diff Top to Bottom</i>											12	0.0	4.6	1.5	5	0.0	0.1	-9.3	6	

<i>Age: 5.5y Wool: 12m</i>		Raw Data – Average Lifetime Performance – Visual Scores										
Adult 6 Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top	155	2.1	2.7	2.4	2.2	1.3	2.2	1.2	2.0	2.8	2.1	1.0
Flock	335	2.0	2.6	2.6	2.4	1.4	2.5	1.2	2.1	2.8	2.0	1.0
Cull	146	2.1	2.5	2.7	2.5	1.4	2.6	1.1	2.2	2.8	2.1	1.0
Total/Ave	636	2.0	2.6	2.6	2.3	1.4	2.5	1.2	2.1	2.8	2.1	1.0
<i>Diff Top to Bottom</i>		-0.1	0.2	-0.3	-0.4	-0.2	-0.3	0.0	-0.3	0.0	0.0	0.0

Balmoral 2016 Drop – AMSEA Grade Change Over Time – David Whyte

		Adult 2			
		Top	Flock	Cull	Total
Post Weaning	Grade				
	Top	85	98	28	211
	Flock	45	133	113	291
	Cull	6	37	89	132
Total		136	268	230	634
48% stayed the same					

Balmoral 2016 Drop – AMSEA Grade Change Between Each Grade & Adult 6 – David Whyte

		Adult 6			
		Top	Flock	Cull	Total
Post Weaning	Grade				
	Top	62	115	34	211
	Flock	72	153	67	292
	Cull	21	67	44	132
Total		155	335	145	635
41% stayed the same					

		Adult 3			
		Top	Flock	Cull	Total
Adult 2	Grade				
	Top	72	64	2	138
	Flock	50	180	42	272
	Cull	13	122	95	230
Total		135	366	139	640
54% stayed the same					

		Adult 6			
		Top	Flock	Cull	Total
Adult 2	Grade				
	Top	58	65	14	137
	Flock	63	153	55	271
	Cull	36	119	76	231
Total		157	337	145	639
45% stayed the same					

		Adult 4			
		Top	Flock	Cull	Total
Adult 3	Grade				
	Top	82	50	3	135
	Flock	99	216	51	366
	Cull	13	50	76	139
Total		194	316	130	640
58% stayed the same					

		Adult 6			
		Top	Flock	Cull	Total
Adult 3	Grade				
	Top	66	52	16	134
	Flock	80	216	70	366
	Cull	11	68	59	138
Total		157	336	145	638
53% stayed the same					

		Adult 5			
		Top	Flock	Cull	Total
Adult 4	Grade				
	Top	103	75	16	194
	Flock	75	169	72	316
	Cull	2	55	73	130
Total		180	299	161	640
54% stayed the same					

		Adult 6			
		Top	Flock	Cull	Total
Adult 4	Grade				
	Top	86	86	22	194
	Flock	69	198	48	315
	Cull	2	53	75	130
Total		157	337	145	639
56% stayed the same					

		Adult 6			
		Top	Flock	Cull	Total
Adult 5	Grade				
	Top	95	74	11	180
	Flock	51	191	57	299
	Cull	11	72	77	160
Total		157	337	145	639
57% stayed the same					

		Adult 6			
		Top	Flock	Cull	Total
Adult 5	Grade				
	Top	95	74	11	180
	Flock	51	191	57	299
	Cull	11	72	77	160
Total		157	337	145	639
57% stayed the same					

Appendix – Exploring Consolidated AMSEA and Professional Class Grades

This appendix evaluates the long-term productivity of ewes based on their first two AMSEA and Professional classer grades. By analysing the lifetime performance of animals designated as either 'retained' or 'removed' during early assessments, this work illustrates the impact of visual selection on flock performance over the lifetime of that flock.

Balmoral 2016 Drop – AMSEA Grade – David Whyte Measured LIFETIME Performance by Grade (Drop Level) –Average Lifetime CFW, FD, SL, SS, WT, EMD, WR, A5 MP+ Index - followed by Ave LT Scored Dag, Bdwr, Char, Col, Flrot, Dust, Back, Legs, Face, Spig, Jaw

AMSEA Class – Post Weaning

Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+
Top/Flock	504	3.0	16.7	87	37	47	3.0	21	4.1	101
Cull	132	2.9	16.6	82	35	45	2.9	21	3.8	99
Total	636	3.0	16.7	86	37	47	3.0	21	4.0	101

Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top/Flock	504	2.03	2.61	2.59	2.30	1.29	2.43	1.15	2.08	2.76	2.08	1.02
Cull	132	2.06	2.58	2.68	2.54	1.61	2.60	1.15	2.13	2.80	1.97	1.03
Total/Ave	636	2.03	2.61	2.61	2.35	1.35	2.46	1.15	2.09	2.77	2.05	1.02

AMSEA Class – Adult 2

Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+
Top/Flock	404	3.1	16.8	88	38	47	3.0	21	4.1	102
Cull	231	2.9	16.6	82	35	46	3.0	21	4.0	99
Total	635	3.0	16.7	86	37	47	3.0	21	4.0	101

Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top/Flock	408	2.04	2.61	2.53	2.26	1.26	2.38	1.14	2.07	2.74	2.06	1.01
Cull	231	2.02	2.60	2.74	2.50	1.53	2.61	1.17	2.12	2.81	2.03	1.03
Total/Ave	639	2.03	2.61	2.61	2.35	1.35	2.46	1.15	2.09	2.77	2.05	1.02

Balmoral 2016 Drop – Professional Class – Bill Walker Measured LIFETIME Performance by Grade (Drop Level) – Average Lifetime CFW, FD, SL, SS, WT, EMD, WR, A5 MP+ Index - followed by Ave LT Scored Dag, Bdwr, Char, Col, Flrot, Dust, Back, Legs, Face, Spig, Jaw

Prof Class – Post Weaning

Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+
Top Stud Second	396	3.0	16.7	87	37	47	3.1	21	4.2	101
Sale	185	3.0	16.7	84	36	46	2.9	21	3.9	100
Cull	50	2.9	16.5	81	36	43	2.9	20	3.1	98
Total	636	3.0	16.7	86	37	47	3.0	21	4.0	101

Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top Stud Second	397	2.03	2.58	2.55	2.31	1.29	2.38	1.13	2.07	2.74	2.08	1.02
Sale	185	1.99	2.66	2.71	2.40	1.45	2.61	1.17	2.11	2.82	1.99	1.02
Cull	50	2.30	2.64	2.68	2.44	1.55	2.57	1.22	2.21	2.85	2.02	1.02
Total/Ave	632	2.03	2.61	2.61	2.35	1.35	2.46	1.15	2.09	2.77	2.05	1.02

Prof Class – Adult 2

Grade	Count	CFW	FD	SL	SS	WT	FAT	EMD	WR	MP+
Top Stud Second	391	3.0	16.7	88	37	47	3.1	21	4.1	102
Sale	199	3.0	16.8	84	36	46	2.9	21	4.0	100
Cull	46	2.9	16.3	80	36	43	2.9	20	3.4	96
Total	636	3.0	16.7	86	37	47	3.0	21	4.0	101

Grade	Count	Dag	Bdwr	Char	Col	Flrot	Dust	Back	Legs	Face	Spig	Jaw
Top Stud Second	393	2.00	2.58	2.51	2.27	1.26	2.37	1.14	2.05	2.74	2.08	1.01
Sale	201	2.06	2.63	2.79	2.48	1.48	2.63	1.16	2.14	2.81	1.98	1.02
Cull	46	2.15	2.77	2.58	2.45	1.64	2.50	1.24	2.23	2.79	2.18	1.07
Total/Ave	640	2.03	2.61	2.61	2.35	1.35	2.46	1.15	2.09	2.77	2.05	1.02