White Suffolk Progeny Test Report

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(DRAFT 25/11/06 Revised 4/12/06)

1 The White Suffolk Breed Society ran a progeny test program in NSW and WA in 2005/06. The NSW site tested 9 rams with lambing dates ranging from 17th June until 24th June with 95 lambs initially included in the analysis. The WA site tested 8 sires lambing from 23rd June until 29th June with 147 lambs included in the analysis. The number of lambs available for the analysis was lower than we had hoped for due to high lamb mortalities, hence the precision of the estimates obtained are lower than I would have liked. There were 2 sires in common. Table 1 shows the sire listing and the distribution of lambs by sex and birthtype which were initially included in the analysis. Two sires were in common and these were used to provide genetic linkage between the sites.

Table 1 Sex and birth type of lambs initially included in the analysis (link sires shown in bold).

NSW		Sex		Birth type				
Sire	Sire code	Male	Female	Single	Twin	Twin/ single	Trip/ single	Trip/ twin
Avago/Pendarra 043015	A 301/04	3	7	2	4	3	1	
Chesson Park 030012	CP 12/03	2	11	3	5	4	1	
Depta Grove 030258	**DG 258/03**	**6**	**5**	**3**	**4**	**4**		
Depta Grove 020419	DG 419/02	8	6	2	6	5	1	
Depta Grove 030263	DG 263/03	3	2	2	2	1		
Marverley 040526	M 526/04	3	5	3		5		
Maroola 030772	M 772/03	6	5	2	4	5		
Warburn 030514	W 514/03	6	6	5		6	1	
Woolumbool 988017	**W 17/98**	**5**	**6**	**3**	**2**	**5**	**1**	
WA								
Allendale 030302	A 302/03	8	3	8	2	1		
Kurralea 020063	K 63/02	7	9	7	6	3		
Wingamin 032790	W 2790/03	11	8	9	6	2		2
Pendarra 032260	P 2260/03	13	8	8	8	1	4	
Maroola 030802	M 802/03	7	17	9	14	1		
Woolumbool 988017	**W 17/98**	**9**	**9**	**11**	**6**	**1**		
Woodbridge 030896	W 896/03	10	8	7	6	3		2
Depta Grove 030258	**DG 258/03**	**13**	**7**	**9**	**6**	**5**		

The main method of statistical analysis that has been used is known as REML and was generated on the standard statistical software package known as Genstat by Mr Gavin Kearney a highly qualified biometrician who until recently worked for the Department of Primary Industries at Hamilton. REML is an acronym for Residual Maximum Likelihood. REML proves efficient estimates of treatment effects in unbalanced data sets with more than one source of error. The REML variance components analysis has been used to estimate the sire effects after adjusting for other effects such as date of birth, site of progeny test, sex of lamb and birth type. In most of the analyses shown below the model has been run several times and terms and

interactions which were not statistically significant have been dropped out of the results presented.
It is important to remember that the results reported here are progeny means. This means that differences between sires in this data will only be half that estimated by Lambplan EBV's (Estimated Breeding Values, now reported as Australian Sheep Breeding Values by Sheep Genetics Australia). This is because the sire only contributes half the genes to his progeny.

2 The first analyses were for measures made when the lambs were about 60 days of age (19/8/05).

2 A Liveweight

The final model which I am reporting here indicated that site, sire, birth type and sex all had statistically significant effects on liveweight. This analysis had 241 units.

Table 2 shows the Site, Sex and birth type effects

Site	NSW = 18.7	WA = 20.8	
Sex	Male = 20.2	Female = 19.3	
Birth Type	Single = 23.1	Twin = 19.2	Tw/S = 20.8

Table 3 shows the predicted sire means for weight on 19/8/05

Sire	Weight (Kg)
DG 263/03	16.8
M 802/03	18.1
CP 12/03	18.8
W 2790/03	18.9
M 526/04	19.3
P 2260/03	19.5
W 17/98	19.5
W 896/03	19.7
A 301/04	20.3
W 514/03	20.5
M 772/03	20.6
A 302/03	20.6
K 63/02	20.7
DG 258/03	21
DG 419/02	21.8

The average standard error of differences in table 3 was 1.1. As a reasonable approximation, sires where the difference between the predicted means was greater than 2.2 are likely to be statistically significantly different.
The range in predicted means was 5 Kg. This means that we can't be sure that sire W 896/03 is really different from Sire DG 419/02 or that Sire W 2790/03 is really different from sire DG 263/03.
Nevertheless our best estimate is that the sires will rank in the order shown

3 The next analyses were made on measurements when the lambs were about 90 days of age (19/9/05)

3 A Liveweight 19/9/05

In this analysis there was a significant interaction between Site and Birth type. This is shown in table 4. The sex and sire effects were also significant. There were 240 units in this analysis.

Table 4 Site and Birth type interaction for weight on 19/9/05

Birth type	Single	Tr/S	Tr/Tw	Twin	Tw/S
Site					
NSW	33	28.3	*	30.8	30.7
WA	34.2	*	27.9	28.1	31.6

Predicted means for males were 30.7 Kg and females 29.2 Kg

Table 5 Predicted sire means for weights on 19/9/05

Sire	Weight (Kg)
DG 263/03	25.9
CP 12/03	28.3
M802/03	28.6
W 2790/03	28.7
M772/03	29.1
A 301/04	29.3
P2260/03	30.4
M526/04	30.7
W 896/03	30.8
W17/98	31
W514/03	31.2
DG 419/02	31.3
DG 258/03	31.3
A 302/03	31.4
K 63/02	31.8

The average standard error of differences in table 5 was 1.45. As a reasonable approximation, a difference of 2.9 kg should be significant.
The range shown in table 5 is 5.9 kg. In other words the best 11 animals might not differ and also the worst 4 might not differ. Nevertheless our best estimate is that the animals will rank in the order shown.

3 B Eye Muscle Depth on 19/9/05

In this analysis there was a significant site by sire interaction. Birth type site and sire were all significant but sex was not. Table 6 shows the predicted means for the site by sire interaction. There were 240 units in this analysis. There were no adjustments made to a common liveweight.

Table 6 Site x Sire interaction for Eye Muscle Depth on 19/9/05

Sire	NSW	WA
A 301/04	25.1	*
A 302/03	*	23.8
CP 12/03	23.8	*
DG 258/03	25.6	24.1
DG 419/02	25.7	*
DG 263/03	24.1	*
K 63/02	*	22.7
M 526/04	25.4	*
M 772/03	24	*
M 802/03	*	21

P 2260/03	*	23.1
W 17/98	25.8	21.1
W 514/03	24.8	*
W 896/03	*	22.3
W 2790/03	*	21.7

To more clearly focus on the sire effect we repeated the analysis after dropping the interaction term. In this analysis Site sire and birth type were all significant

Table 7 Predicted Site and Birth type effects for Eye Muscle Depth on 19/9/05

Site	NSW = 25.2	WA = 22.1	
Birth type	Single = 26	Twin = 23.2	Tw/S = 24.3

Table 8 Predicted sire means for Eye Muscle Depth on 19/9/05

Sire	EMD (mm)
CP 12/03	22.3
M 772/03	22.5
M 802/03	22.6
DG 263/03	22.7
W 2790/03	23.3
W 514/03	23.3
W 17/ 98	23.3
A 301/04	23.6
W896/03	23.9
M 526/04	23.9
DG 419/02	24.2
K 63/02	24.2
P 2260/03	24.7
DG 258/03	25.1
A 302/03	25.4

The average standard error of differences in table 8 was 1.1. As a reasonable approximation, a difference of 2.2 mm should be significant.
The range between sires was 3.1 mm. Our best estimate is that the sires will rank in the order shown but we can't be sure that there are real differences between the best 11 rams.

3 C Fat Depth on 19/9/05

For this analysis the data had to be transformed to logs to stabilise the variance and allow more effective analysis. For presentation here the data has also been retransformed to the real measurements. There were 240 units in this analysis. Birth type was significant and the sire effect approached significance. Sex and site were not significant. These measurements are the C measurement over the eyemuscle, not the GR measurement used on lamb carcasses. There were no adjustments made to a common liveweight.

Birth type: Singles = 1.4 as a log or 4.1 mm
Twins = 1.2 as a log or 3.4 mm
Twins/single = 1.3 as a log or 3.8 mm

Table 9 Predicted Sire means for fat depth on 9/9/05

Sire	Log Fat	Fat (mm)
DG 263/03	1.121	3.1
M 802/03	1.269	3.6

M772/03	1.276	3.6
CP 12/03	1.28	3.6
W 514/03	1.285	3.6
M 526/03	1.29	3.6
W 2790/03	1.293	3.6
W 17/98	1.311	3.7
P2260/03	1.317	3.7
W 896/03	1.323	3.8
K 63/02	1.349	3.9
A301/04	1.366	3.9
DG 419/02	1.367	3.9
DG 258/03	1.381	4
A 302/03	1.447	4.4

The average standard error of differences was 0.081 log units so that as a rough approximation, where sire mean differences were greater than 0.16 (log units) then this difference was likely to be significant.

The range between sires was 0.326 (log units). This means that we can't really be sure that the 4 leanest animals are really different. Nevertheless our best estimate is that the sires would rank in the order shown.

4 The next analyses were made on measurements when the lambs were about 140 days of age (16/11/05)

4 A Liveweight 16/11/05

In this analysis the site, birth type and a site x birthtype interaction and sex effects were all significant while the sire effect itself approached significance. There were 238 units in this analysis.

The site x birthtype interaction is shown in table 10.

Table 10 Predicted Birth type x site interaction for weight on 6/11/05

Birth type	Single	Tr/S	Tr/Tw	Twin	Tw/S
Site					
NSW	44	37.4	*	40.9	40.6
WA	47.3	*	40	40.2	43.4

Predicted mean for males was 42 Kg and for females was 40 Kg

The sire effects are shown in Table 11

Table 11. Predicted sire means for weight on 6/11/05

Sire	Wt (Kg)
DG 263/03	38.3
M 802/03	39.2
W 2790/03	39.8
A 301/04	39.8
CP 12/03	40.1
M 772/03	40.5
W 514/03	41
W 896/03	41.3
A 302/03	41.4
W 17/98	41.5
P 2260/03	41.8
M 526/04	42.1
DG 419/02	42.5

K 63/02	42.6
DG 258/03	43

The average standard error of differences between means was 1.76.
As a rough approximation when there were differences between sire means greater than 3.5 Kg these differences would be significant.
The range between sires was 4.7 kg. Our best estimate is that the sires will rank in the order shown but we can't be absolutely certain that there are real differences between the top 13 rams.

4 B Eye Muscle Depth from WA on 6/11/05

The NSW lambs were not scanned at this time.
There were a significant effects of sire and birth type. There were 143 units in this analysis.
The Birth type effects were Single = 27.9, Twin = 24.6 and Twin/single = 26.4

Table 12. Predicted means for Eye Muscle Depth from WA lambs 6/11/05

Sire	EMD (mm)
W 2790/03	24.2
W 17/98	24.4
M 802/03	25
W 896/03	25.3
A 302/03	26.4
K 63/02	26.5
P 2260/03	27.5
DG 258/03	27.7

The average standard error of differences was 0.75.
This means that when sires differed by more than 1.5 mm then the differences would be significant.
The range between sire was 3.5 mm. This means that the best 4 sire may not differ significantly, nevertheless our best estimate is that they will rank in the order shown.

4 C Fat Depth from WA on 6/11/05

Birth type had a significant effect on fat depth, but the sire effect was not significant.
There were 143 units in this analysis.
The Birth Type effects were Single = 4.7, Twin = 3.8 and Twin/single = 4.2

Table 13 Predicted Sire effects from WA lambs on 6/11/05

Sire	Fat depth (mm)
W 896/03	3.9
W 2790/03	4
K 63/02	4
W 17/98	4.1
P 2260/03	4.1
M 802/03	4.2
A 302/03	4.5
DG 258/03	4.5

The average standard error of differences was 0.3.
Where the differences between sire means was greater than 0.6 this would be likely to be significant.
The maximum difference between sire groups was 0.6. We predict that the sires would rank in the order shown but we can't be sure that these differences are real.

5 The next analyses were made on measurements just before the lambs were slaughtered. at about 250 days of age (7/3/06)

5 A Final Liveweight

In this analysis the Birth type, sex and sire effects were all significant. There were 173 units included in this analysis

The Birthtype effects were Single = 55.4, Twin = 52.6 and twin/single = 53

The sex effects were Male = 53.5 and Female = 51.7

Table 14 Predicted Sire effects on Final liveweight

Sire	Weight (Kg)
M 802/03	49.7
A 301/04	49.8
DG 263/03	50.4
M 772/03	50.8
CP 12/03	51.5
A 302/03	52
W 896/03	52.2
DG 419/02	52.2
DG 258/03	52.9
M 526/04	53.3
W 2790/03	53.4
W 514/03	54.1
P 2260/03	54.5
K 63/02	55.4
W 17/98	56.4

The average standard error of differences was 2.5

As a rough approximation when the differences between sire groups was greater than 5 then the difference is likely to be significant

The range between sires was 6.7. Our best estimate is that the sire will rank in the order shown but we can't be sure that there are real differences between the heaviest 11 groups

5 B Final Muscle Depth preslaughter (mm)

In this analysis there was a significant interaction between site and sire. There were 177 units included in this analysis.

Table 15. Final scan muscle depth including interaction with site

Sire	NSW	WA
A301/04	23	*
A 302/03	*	29.8
CP 12/03	21.9	*
DG 258/03	23.6	31.3
DG 419/02	22.6	*
DG 263/03	23.8	*
K 63/02	*	28.8
M 526/04	22.8	*
M772/03	21.9	*
M 802/03	*	27.9
P 2260/03	*	30.2
W 17/98	24.1	28.1
W 514/03	23.3	*
W896/03	*	28.6
W 2790/03	*	28

For simplicity this was reanalysed excluding the interaction. In this case site was a significant term.
The predicted mean for NSW was 22.9Kg and for WA it was 28.9 Kg

Table 16 Final scan muscle depth

Sire	EMD (mm)
M 772/03	24.9
CP 12/03	24.9
M 802/03	24.9
W 2790/03	25
W 896/03	25.6
DG 419/02	25.6
M 526/04	25.7
K 63/02	25.8
A 301/04	26
W 17/98	26.1
W 514/03	26.2
DG 263/03	26.7
A 302/03	26.8
P 2260/03	27.2
DG 258/03	27.4

The average standard error of differences was 1.3
As a useful approximation when the difference between sires was greater than 2.6 these differences are likely to be statistically significant.
The range between sire was 2.5.
Our best estimate is that the sires will rank in the order shown.

5 C Final Scan Fat Depth preslaughter
In this analysis the site and sex effects were significant but sire was not. There were 177 units in this analysis.
The predicted means for Birth type were; Single = 3.9, Trip/single = 3.2, Trip/twin = 4.5, Twin = 4.0 and Twin/single = 3.7. The minimal difference between singles and twins suggests that this significance might be an anomaly.
The predicted means for site were NSW = 3.6 and WA = 4.1
Table 17 Final scan fat depth

Sire	Fat (mm)
DG263/03	3.5
DG 419/02	3.5
W 2790/03	3.5
W 896/03	3.6
DG 258/03	3.7
M 802/03	3.7
M 772/03	3.9
K 63/02	3.9
CP 12/03	3.9
P 2260/03	3.9
A 302/03	4.0
M 526/04	4.0
W 17/98	4.1
A 301/04	4.2
W 514/03	4.5

The average standard error of differences was 0.4. This means that a difference greater than 0.8 was required for statistical significance.
The range between sires was 1

6 Slaughter data

Not all animals were big enough for sending in for slaughter

6 A Hot Carcass weight

In this analysis sex and sire were statistically significant. There were 162 units included in this analysis.
The sex effect was Males = 24.8, and Females = 23.8 Kg

Table 18 Predicted Sire effect on Hot Carcass weight

Sire	Hot Carcass Weight (Kg)
A301/04	22.25
M 802/03	23.23
CP 12/03	23.29
M 772/03	23.58
DG 263/03	23.61
W 896/03	23.83
DG 419/02	24.05
A 302/03	24.29
W 2790/03	24.4
M 526/04	24.7
DG 258/03	24.8
W 514/03	25.17
P 2260/03	25.57
W 17/98	25.88
K 63/02	26.3

The average standard error of differences was 1.34. This means that a difference of more than 2.68 was required before we could be sure that sires differed in mean carcass weight of there progeny.
The maximum range in sire means was 4.05. This means that we could not be certain there were differences between the best 10 sires. Nevertheless our best estimate is that the sires will rank in the order shown.

Comment 1. If carcasses were valued at $3.50 per Kg and there were no other discounts for not meeting specifications, then the lowest group would be worth $77.88 and the highest group $$92.05m, a difference of $14.17 per head. This difference in returns indicates the need to distinguish between differences which would be very important to the producer in real life and those which are statistically significant. Therefore it is important to make every effort to design and analyse results in ways which allow accurate distinctions to be made which are both statistically and financially valid. This progeny test suffers to some extent from the low number of lambs that we ended up with.

6 B Dressing Percentage

For dressing % site was the only significant factor. There were 159 units included in the analysis.

Predicted means for site; NSW = 46.3 and WA = 44.1

Table 19 Dressing %

Sire	Dressing %
DG 263/03	43.8
CP 12/03	44.3
A 301/04	44.3
M 526/04	44.6
DG 419/02	44.8
W 514/03	44.8
W 2790/03	44.9
W 17/98	45.2
M 772/03	45.3
W 896/03	45.4
DG 258/03	45.7
A 302/03	45.8
M 802/03	45.9
P 2260/03	46.1
K 63/02	46.9

The average standard error of differences was 1.1. This means that a difference of more than 2.2 between sire means was required for statistical significance.

The maximum range between sires was 3.1.

6 C Viascan Yield

Viascan estimates of the actual meat yield on the carcass were obtained. For this analysis sire and the interaction between site and birthtype were significant. There were 157 units included in the analysis.

Table 20 Site x Birthtype interaction

	Single	Trip/single	Trip/twin	Twin	Twin.single
NSW	55.4	56	*	54.5	55
WA	50.2	*	50.7	52.1	50.5

Table 21 Sire effects on Viascan yields

Sire	Viascan Yield %
W17/98	51.9
CP 12/03	52.2
M 526/04	52.2
W 514/03	52.1
P 2260/03	52.5
M 772/03	52.6
A 302/03	52.7
K 63/02	52.8
A 301/04	53.4
W 2790/03	53.8
DG 419/02	54
DG 258/03	54.2
DG 263/03	54.4
M 802/03	54.4
W 896/03	55

The Average Standard error of differences was 1.16. This means that a difference of 2.3 was required for statistical significance.
The maximum range between sire was 3.1 .This means that we can't be sure that the differences between the best 9 sires was real. Nevertheless out best estimate is that the sires would rank in the order shown.

7 A Overall Growth

One way to look at this is to place 3 tables side by side to see how much the sires move around in their rankings. The 3 tables I am using are Carcass weight, Final liveweight and Liveweight as the animals approached a possible tradeweight slaughter

Table 22 Overall growth effects

Sire	Hot Carcass Weight (Kg)	Sire	Final Live Weight (Kg)	Sire	Live Weight 6/11/05 (Kg)
A301/04	22.25	M 802/03	49.7	DG 263/03	38.3
M 802/03	23.23	A 301/04	49.8	M 802/03	39.2
CP 12/03	23.29	DG 263/03	50.4	W 2790/03	39.8
M 772/03	23.58	M 772/03	50.8	A 301/04	39.8
DG 263/03	23.61	CP 12/03	51.5	CP 12/03	40.1
W 896/03	23.83	A 302/03	52	M 772/03	40.5
DG 419/02	24.05	W 896/03	52.2	W 514/03	41
A 302/03	24.29	DG 419/02	52.2	W 896/03	41.3
W 2790/03	24.4	DG 258/03	52.9	A 302/03	41.4
M 526/04	24.7	M 526/04	53.3	W 17/98	41.5
DG 258/03	24.8	W 2790/03	53.4	P 2260/03	41.8
W 514/03	25.17	W 514/03	54.1	M 526/04	42.1
P 2260/03	25.57	P 2260/03	54.5	DG 419/02	42.5
W 17/98	25.88	K 63/02	55.4	K 63/02	42.6
K 63/02	26.3	W 17/98	56.4	DG 258/03	43

In this table I have highlighted the heaviest and lightest one third of sire groups as carcasses to show how they ranked for final liveweight and for liveweight on 6/11/95. **It is evident that there is a high degree of consistency across these 3 separate measurements. I would further interpret this to indicate that sires K 63/02, DG 258/03 and P 2260/03 were consistently high growth sires and sire A 301/04, M 802/03, CP 12/03 and DG 263/03 were consistently low growth sires.**

7 B Overall Muscle and Fat

It is less satisfactory to do this for muscle because only the WA lambs were scanned on 6/11.These carcass measurements are not adjusted for liveweight. There does appear to be moderate consistency between the measurements

Table 23 Scanned Eye Muscle Depth

Sire	Final Live EMD (mm)		Sire	EMD (mm) 6/11 (WA)
M 772/03	24.9		W 2790/03	24.2
CP 12/03	24.9		W 17/98	24.4
M 802/03	24.9		M 802/03	25
W 2790/03	25		W 896/03	25.3
W 896/03	25.6		A 302/03	26.4
DG 419/02	25.6		K 63/02	26.5
M 526/04	25.7		P 2260/03	27.5
K 63/02	25.8		DG 258/03	27.7
A 301/04	26			
W 17/98	26.1			
W 514/03	26.2			
DG 263/03	26.7			
A 302/03	26.8			
P 2260/03	27.2			
DG 258/03	27.4			

Table 24 Scanned Fat Depth.

Sire	Final Live Fat (mm)		Sire	Fat depth (mm) 6/11 (WA)
DG263/03	3.5		W 896/03	3.9
DG 419/02	3.5		W 2790/03	4
W 2790/03	3.5		K 63/02	4
W 896/03	3.6		M 802/03	4.1
DG 258/03	3.7		W 17/98	4.1
M 802/03	3.7		P 2260/03	4.2
M 772/03	3.9		A 302/03	4.5
K 63/02	3.9		DG 258/03	4.5
CP 12/03	3.9			
P 2260/03	3.9			
A 302/03	4.0			
M 526/04	4.0			
W 17/98	4.1			
A 301/04	4.2			
W 514/03	4.5			

Appendix
Further discussion of Viascan Results

The overall average hot carcass weight was 24.33 Kg. If this is valued at $3.50/Kg then the carcass value is $85.16. The average carcass yield was 53.13%. Therefore the average actually yielded 12.9 Kg of meat, and then the average value of each Kg of meat was $6.60.

Table 25 What is the effect of this variation?

Live Wt	Dress%	Value @ $3.50	Viascan%	Value @$6.60
49	44	75.46	51	72.59
49	44	"	55	78.26
49	47	80.61	51	77.51
49	47	"	55	83.60
55	44	84.70	51	81.45
55	44	"	55	87.85
55	47	90.48	51	87.01
55	47	"	55	93.84

Viascan has the potential to further identify value down to individual cuts and we were able to get this for the WA lambs.

I did some regressions to look at aspects of Viascan yield.

The first of these related Viascan yield to final liveweight on 7/3/06. This gave rise to the equation;
Viascan yield = 69.8 (± 1.9) – 0.32 (±0.03) x Actual wt
In this equation 35% of the variance in viascan yield is explained by liveweight. It is interesting to note that the sign is negative, in other words heavier animals had a lower yield.

The second of these related Viascan yield to final scan muscle depth. This gave rise to the equation;
Viascan yield = 63.9(± 1.2) – 0.42(± 0.05) x muscle depth.
In this equation 35% of the variance in viascan yield is explained by muscle depth. In this equation the sign is also negative, in other words this suggests that lambs with a greater eye muscle depth had a lower yield.

The third equation related Viascan yield to final scanned fat depth. This gave rise to the equation;
Viascan yield = 59.6 (±0.9) – 1.7 (± 0.3) Fat depth
In this equation the percentage of variance accounted for was 27%. Again the coefficient associated with fat depth is negative, in other words fatter animals have lower meat yields.

Comment 2
The negative relationship between Viascan yield and muscle depth was not what I expected. I have attempted to follow up on this by contacting Alex Ball. He pointed out that Viascan yield is very strongly driven by fatness. Thus the third equation is what would be expected. The first equation is reasonable in that bigger carcasses would often be fatter. In order to get the expected positive relationship with scanned eyemuscle depth it might be necessary to adjust for fatness.

I then arranged to do a more complex adjusted regression analysis where the Viascan yield was related to site, sire, final scan fat, hot carcass wt and final scan muscle. This gave an equation in the following form;
Viascan yield = Constant – Site parameter + Sire parameter - scan fat – Carcass wt + scan muscle
I.E.: Viascan yield = 65.08 (± 1.71) - 4.37 (± 0.74)for WA + Sire parameters – 0.59 (±0.20) x fat – 0.40 (±0.07) x carcass wt + 0.04 (±0.07) x muscle
The reference levels for the factors were Site = NSW and Sire = A 301/04 (standard errors in brackets). This equation accounted for 62.5% of the variance.
The other sire parameters are shown in table 26.
Table 26 Regression estimates for Viascan yield

Sire	estimate	se
CP 12/03	-0.68	0.87
M 772/03	-0.26	0.92
M 526/04	0.01	1.03
W 17/98	0.08	0.9
A 302/03	0.16	1.12
W 514/03	0.49	0.9
P 2260/03	0.55	1.08
DG 419/02	1.08	0.89
W 2790/03	1.17	1.11
K 63/02	1.28	1.09
DG 258/03	1.6	0.87
DG 263/03	1.68	1.27
M 802/03	2	1.06
W 896/03	2.26	1.07

In this table the maximum sire effects on Viascan yield are 2.9%. This range is reasonably similar to table 21 and the ranking of sires is similar. The statistical method is slightly less appropriate for calculating sire differences than that used in table 21 but it does take into account differences due to differences in carcass weight, fatness and muscle. It confirms negative relationships of viascan yield with carcass weight and fat depth. In this analysis scanned eye muscle depth appears to have very little relationship to overall viascan yield. Given that we are talking about a single muscle depth measurement at one site on the carcass compared to whole carcass lean meat yield this might not be unreasonable.

The WA processor gave us an extended list of Viascan output. As well as the whole carcass yield he also gave us primal measurements ant then extended that down to the individual cut level. Not all animals made slaughter weight so this analysis might be slightly biased and is only looking at 10 -12 animals per sire group.
Table 27 summarises these results for the different sires. Very often there were statistically significant sire effects. As in the tables before this, it means that across the full range of sires, the ones with the biggest values are different to those with the smallest, but there is a great deal of overlap.
The table shows the predicted weights of individual cuts. These cuts have different retail values and so could be used to fully value the lambs. Using the individual cut weights combines the effect of carcass weight and predicted yield for each cut and represents value at a common slaughter age.

The progeny of Ram K 63/03 appear to have performed exceptionally well. They had heavy carcass weights and were also in the top group for all the individual cuts.
Rams DG 258/03 and P2260/03 were also quite good while rams A 302/03 and W 896/03 were poorer.

Table 27 More details from the Viascan data from WA

Sire	A 302/03	DG 258/03	K 63/02	M 802/03	P 2260/03	W 17/98	W 2790/03	W 896/03	SED
Standard Carcass Measurements									
Fat Score	3.38	3.13	3.43	3.44	3.60	3.57	3.31	3.01	0.21 *
Cold Car Wt	23.13	24.17	25.36	22.82	24.54	24.02	23.29	22.36	0.99 *
Yield of Primal Cuts and overall lean meat yield (%)									
Leg Yield	22.06	22.99	21.92	22.90	21.65	21.33	22.53	23.04.	0.53 *
Loin Yield	12.39	13.05	12.62	12.67	12.98	11.90	12.50	12.93	0.34
Shoulder Yield	15.90	16.29	15.89	16.24	15.50	15.67	16.40	16.69	0.39 *
Carcass Yield	50.36	52.33	50.42	51.82	50.12	48.91	51.42	52.66	1.12 *
Weights of individual cuts (Kg)									
Loin eye	1.32	1.41	1.46	1.34	1.45	1.35	1.38	1.32	0.06
Rack trim	2.12	2.23	2.33	2.12	2.28	2.18	2.16	2.06	0.09 *
ShortLoin	1.79	1.88	1.97	1.77	1.93	1.81	1.79	1.70	0.09 *
SQ cut Shldr	5.01	5.19	5.44	4.93	5.22	5.15	5.06	4.97	0.19
TenderLoin	0.308	0.325	0.333	0.297	0.318	0.314	0.311	0.306	0.01
Leg tipped	7.19	7.52	7.81	7.14	7.41	7.31	7.27	7.23	0.25
Rump	0.517	0.564	0.562	0.522	0.537	0.517	0.535	0.536	0.02
Silverside	0.89	0.97	0.97	0.90	0.93	0.89	0.92	0.93	0.03
Round	0.94	1.02	1.02	0.95	0.97	0.94	0.97	0.97	0.03
Top side	1.23	1.34	1.33	1.24	1.27	1.22	1.27	1.27	0.05
Rack eye	0.599	0.640	0.661	0.608	0.653	0.610	0.620	0.594	0.03
ShortLoin	0.726	0.775	0.800	0.733	0.792	0.739	0.752	0.721	0.03

* indicates statistically significant sire differences. SED Standard effort of differences
Arbitarily the two highest values are highlighted in blue and lowest in yellow.

Comment 3
Lambplan uses an analytical method called Best Linear Unbiased Prediction (BLUP) using the OVIS software program. This should allow more precision in estimating sire effects than the programs that I have used here because it is designed for genetic comparisons. Lambplan uses the animals own performance for a trait, and the correlations between genetically related traits and the performance of the animals relatives (parents, half brothers and sisters, and progeny) to calculate EBVs for those traits. As the number of progeny increases the relative emphasis (compared to other sources) coming from the progeny performance increases. In Lambplan eye muscle depth and fat depth are estimates of genetic differences at a constant liveweight (for a post weaning estimate this is 45 Kg liveweight)