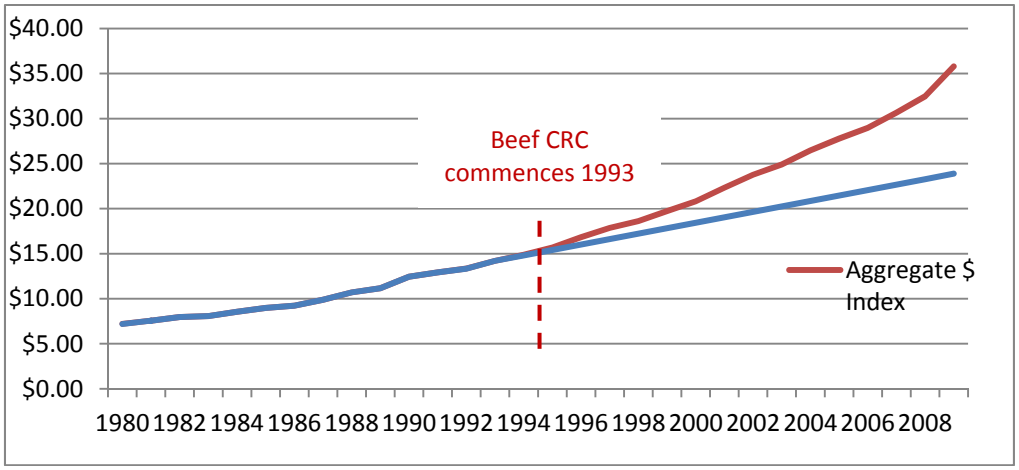
Appendix 5 – New traits in BREEDPLAN (developed in CRCI and II)

Integration of CRC outputs into BREEDPLAN since 1993 can be measured by rates of genetic gain over time in profitability breeding objectives or indexes at individual industry herd and breed society level. A measure of the value of genetic progress in the Australian beef cattle population is the average of the $ Index values for the main market segments targeted by the various breed types, weighed by the proportions of cows in each of those breed types. The $ index value is estimated $ profit per cow joined per year. The individual $ index values for each segment are calculated by the relevant breed societies, and these have been aggregated by Meat and Livestock Australia (R Banks, pers comm. 2012). The aggregate $ index from 1980 to 2009 is shown in the figure below.



The time period covered by the data in the figure can be decomposed into a number of sub periods:

1988-1993 prior to 1993, genetic progress across the Australian cattle population was based on Estimated Breeding Values (EBVs) for growth traits, based mainly on industry recording of weights of cattle at different points in time. Estimated $ profit per cow joined increased from $10.70 to $14.70 during this period ($0.61 per year).

1993-1998 between 1993 and 1998, scanned carcase traits were added to the breeding program as a result of the BREEDPLAN validation program and R&D conducted in Beef CRC I. Estimated $ profit per cow joined increased during this period relative to industry recording of weights alone, reaching $18.61 in 1998. The $ index value averaged $0.75 per cow joined over this period.

1998-2003 reproduction traits were added during the period 1998-2003, increasing the rate of genetic progress. Estimated $ profit per cow joined increased from $18.61 to $24.90 during this period, or at an average rate of $1.03 per cow per year.

2003-2009 actual carcase and feed efficiency traits were added over this period resulting from R&D conducted in CRC I and CRC II. Estimated $ profit per cow joined increased from $24.90 to $35.79 during this period, or by $1.60 per cow per year on average.

The difference between the 2009 profit value and the estimated profit value that would have resulted if only growth traits were available is the incremental value of the new traits added into BREEDPLAN due to CRC R&D. The estimated profit value for 2009 if only growth traits were available is $23.88 per cow per year, based on extrapolation of the 1993 actual index value at the rate of genetic progress observed in the preceding period. This results in a difference in the aggregate $ index of only $0.08 per cow joined in 1994, but increasing steadily to almost $12 per cow joined in 2009.

These annual differences were weighed by the proportion of breeding cows mated to BREEDPLAN bulls, and then assuming a five year lag for the remaining cows in the population. The cumulative value is $558 million in nominal $ values, or $673 million when those values are compounded forward to 2009 $ values at a 4% discount rate. If the CRC claims just 50% of that incremental value, this generates a return of some $336 million from these aspects of the Beef CRC's R&D programs.