

KANGAROO

An Australian industry, a natural product



Kangaroo Specifications & Selected Meat Cuts



KANGAROO INDUSTRIES ASSOCIATION AUSTRALIA



Char Grilled Kangaroo Loin

The Rural Industry Research and Development Corporation gratefully acknowledges the assistance of AUS-MEAT Limited and KIAA for the development of this publication.

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FOREWORD

Kangaroos are a natural and important resource of Australian wildlife and culture. Although a threat to some agricultural practices, there are approved Government management plans, which aim at a balanced approach towards sustaining an acceptable population. Of the forty-eight Kangaroo species only four are harvested commercially within strict management plans and predetermined quotas. Similarly the commercial harvesting of two Wallaby species is permitted.

Kangaroo and Wallaby meat is low in fat, high in protein and minerals, and as such provides a food that promotes a healthy nutritional regime.

The Kangaroo industry has recognised the need to up date the current manual of Trading Language and Specifications to further increase marketing opportunities. In the past the Rural Industry Research and Development Corporation (RIRDC) has funded manuals for a range of new animal industries in an endeavor to foster the acceleration of the development of viable animal product businesses. Therefore it became a priority for the Corporation to update this manual with AUS-MEAT. The professionalism of AUS-MEAT in delivering this publication is acknowledged by the Rural Industry Research and Development Corporation (RIRDC).

The Corporation recognises the interest, support and input that the Kangaroo Industry Association of Australia Inc have provided for the manual.

I recommend this manual to all industry stakeholders.

Simon Hearn
Managing Director
Rural Industry Research and Development Corporation



KANGAROO IN AUSTRALIA



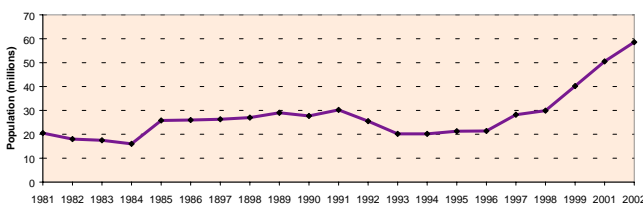
There are 48 species of Kangaroos (macropods) in Australia. European farming practices have vastly improved water and pasture supply in the central Australian rangelands, the home of the 4 largest species of Kangaroo commercially harvested. So much so that their numbers have increased dramatically.

Kangaroos numbers can quickly increase to the point of overgrazing the fragile rangelands, this can cause loss of plant biodiversity and other environmental damage. In addition they compete with sheep for valuable pastures. Because of this, it has become necessary to commercially harvest a controlled percentage of the population to ensure they do not cause environmental and economic damage.

GOVERNMENT CONTROL OF KANGAROO HARVESTING

Each State that commercially harvests Kangaroo must have in place a Federal Government approved Management Program. This requires the Conservation authority to conduct an annual aerial survey of the Kangaroo population and set a harvest quota. This quota is usually around 10% of the total estimated population with strict controls to ensure that no more than the quota number is actually harvested. After 30 years of this practice, monitoring and research techniques have been refined to produce very accurate and sophisticated indicators of total populations and trends in population numbers as well as ensuring the harvest is sustainable.

KANGAROO POPULATION



Part of the control mechanism is the Government issued sequentially numbered, lockable plastic tags, which must be fixed to each animal taken by a registered harvester. Only carcasses identified using the plastic tag are eligible for further processing. The authorities strictly monitor this process and quota allocation. For example they require the Kangaroo harvesters to record and monthly report the sex, weight, species and location of all Kangaroos against the tag number fixed to it to enable full traceback.

Each harvester must be licensed with the State Authority. To be eligible for licensing a person must attend and pass an approved training course, which provides instruction in all aspects of the law that governs Kangaroo harvesting, Meat Hygiene and Animal Welfare regulations. In addition, all harvesting equipment must be inspected and approved by the Government authority ensuring that the Australian standards are met.

Harvested Kangaroos are processed into a range of cuts and value-added products at Government approved meat processing establishments. The 1997 Australian Standard for the Hygienic Production of Game Meat for Human Consumption (SCARM report No.57) requires that all wild game meat processing establishments have an approved Quality Assurance System and Hazard Analysis and Critical Control Point (HACCP) program implemented. Meat processing establishments are audited and inspected by Government approved inspectors to ensure meat hygiene practices comply with the Standards.

KANGAROO INDUSTRY

The Kangaroo Industry in Australia has been exporting Kangaroo Meat products since 1959. The industry has since grown and currently processes over 3 million Kangaroos per year into a range of high quality products. Kangaroo Meat is sold for human consumption to restaurants and retail outlets throughout Australia and the industry exports products to over 40 overseas destinations. The Kangaroo Industry organisations, field harvesters and meat processors work closely with government Authorities to ensure it delivers the highest standard and best practices possible in animal welfare, conservation management and meat hygiene.

AN AUSTRALIAN INDUSTRY A NATURAL PRODUCT

The Kangaroo industry is now widely accepted throughout the Australian ecological management community as an essential environmental management tool. A range of organisations have published position statements in support of sustainably harvesting the abundant Kangaroo populations, these include The Australian Wildlife Management Society, the Ecological Society of Australia, The Australian Veterinary Society, The CSIRO and the Wildlife Preservation Society of Australia.

Indeed many Australian scientists now consider Kangaroo harvesting to be a more environmentally wise use of the fragile rangelands than sheep farming.

There are now more of the commercially harvested species of Kangaroos than there ever has been, they are amongst the most common large wild land mammals on earth. Many argue this is because of the strict management programs put in place for the commercial harvest.

Kangaroo meat is extremely healthy, fat levels are typically 1 - 2% and it is totally free of antibiotics and other chemicals common in meat from domestic animals. It's the ultimate free range meat.

More information can be found by visiting the Kangaroo Industries Association Australia's website:

www.kangaroo-industry.asn.au

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NUTRITIONAL COMPOSITION OF KANGAROO MEAT

Kangaroo meat is very lean and fat levels are typically 1 - 2% and this leanness makes Kangaroo meat very healthy but also means that the meat must be cooked with care to avoid overcooking. Kangaroo meat has been found to be very high in protein and iron content.

The following data are extracts from published analysis on Kangaroo meat.

How Kangaroo meat compares with other meat (based on raw meat trimmed of all fat).

	Protein (%)	Fat (%)	Kilojoules (per 100g)	Cholesterol (mg/100g)	Iron (mg/100g)
Kangaroo	24	1 - 2	500	56	2.6
Lean lamb	22	2 - 7	530	66	1.8
Lean beef	22	2 - 5	500	67	3.5
Lean pork	23	1 - 3	440	50	1.0
Lean chicken breast	23	2	470	50	0.6
Rabbit	22	2 - 4	520	70	1.0

Kangaroo as a manufacturing meat for use in small-goods has a chemical lean content of 99.1% whereas Kangaroo primal cuts are 99.5% lean content. These percentages are from a Government Laboratory "Certificate of Analysis Analytical Results" on Kangaroo product. Kangaroo meat is great when used for manufacturing / further processing and is very high in lean content and water retention.

Source: Food GL & Fogerty AC. 1982. The fatty acids of Kangaroo and wallaby meat. CSIRO Food Research Quarterly, 42, 57-60.



Thai Style Strips

COOKING RECOMMENDATIONS

Kangaroo meat products can be prepared into a variety of creative dishes using wet and dry cooking methods. Generally, fat content in meat contains a lot of moisture and can be cooked to a very well done state. In comparison, Kangaroo meat, because of its low fat content, can easily dry out during the cooking process. It is therefore recommended to follow a few simple cooking steps to retain moisture and the game meat flavour.

Recommended steps are:

1. Kangaroo meat should be handled and cooked like any other lean low fat red meat. It is not recommended to over cook Kangaroo meat. Brush the meat with oil (e.g. peanut, olive or sesame) prior to cooking either by pan frying, barbecue or roasting.
2. Place in a hot pan and quickly turn to ensure both sides are seared (browned), seal and turn only once to retain moisture.
3. Roasting is an ideal cooking method for Kangaroo meat and for the best results cook at controlled temperatures. It is not recommended to over cook Kangaroo meat when roasting as the absence of fat can make the meat dry out and eating quality is reduced.

Provided these simple steps are followed, cuts of Kangaroo meat can be prepared in a similar fashion as all other red meats.

More information can be found by visiting the Kangaroo Industries Association Australia's Website: www.kangaroo-industry.asn.au

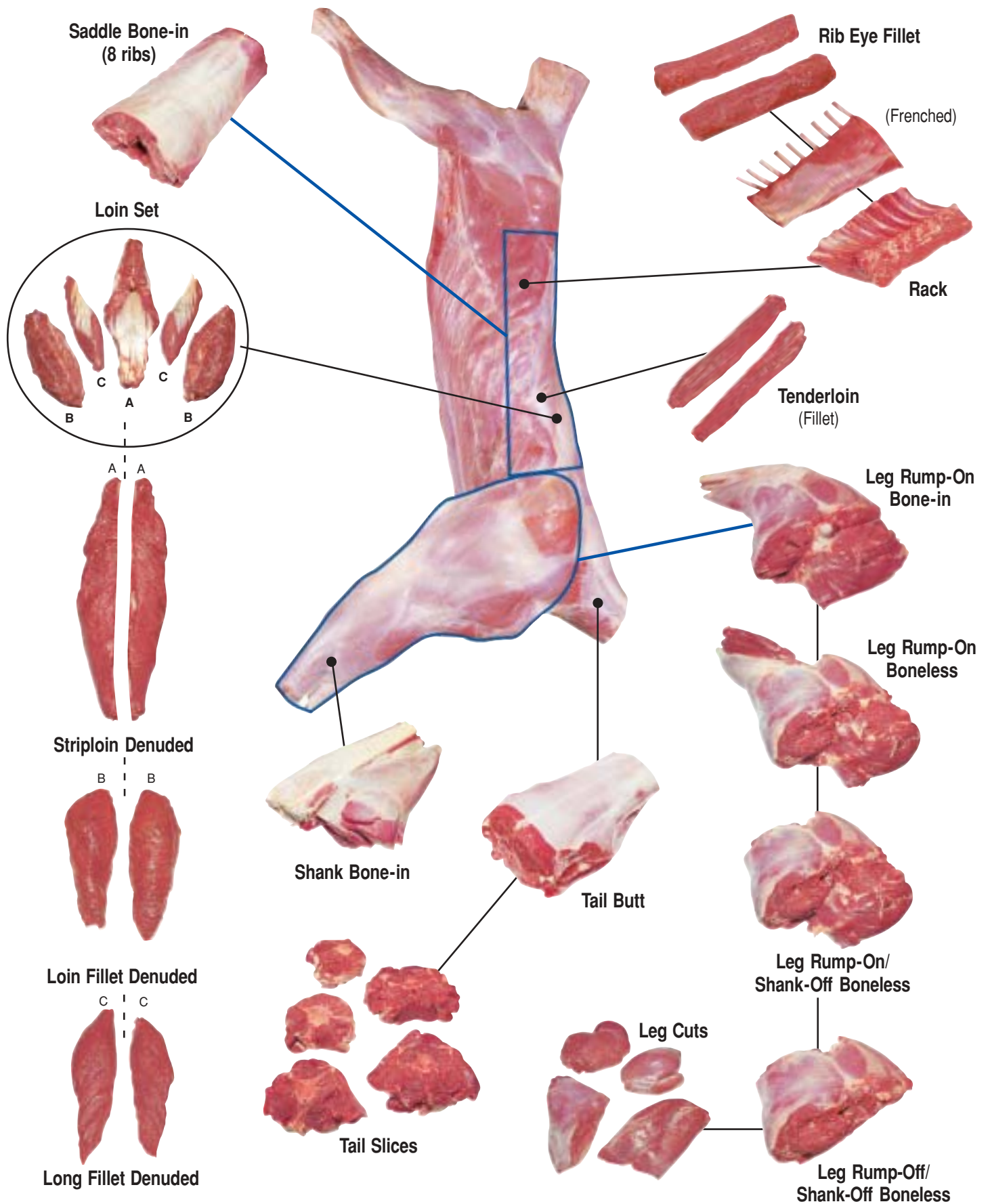


Braised Knuckle

KANGAROO MEAT COOKING GUIDE

PRODUCT	Short-fry	Roasting	Braising	Stewing	Poaching	Processing	Smoking	Stir-fry	Raw Marinating
Carcase (WK1 / 2)						✓			
Knuckle (WK17)		✓	✓	✓	✓	✓	✓		
Leg Rolled (WK11)		✓	✓						
Loin Fillet (WK28 / 32)	✓	✓	✓				✓	✓	✓
Long Fillet (WK29 / 33)	✓	✓		✓	✓		✓	✓	✓
Rack Frenched (WK22)		✓							
Rib Eye Fillet (WK20)			✓	✓				✓	✓
Rump (WK15)	✓	✓	✓	✓		✓	✓	✓	✓
Saddle Bone-in (WK23)		✓							
Shank Bone-in (WK18)			✓	✓	✓				
Shoulder Roll (WK13)		✓	✓						
Silverside (WK16)				✓	✓	✓	✓		
Striploin (WK31)	✓							✓	✓
Tail (WK37)			✓	✓					
Tenderloin Fillet (WK19)			✓	✓		✓			✓
Topside (WK14)	✓	✓	✓	✓	✓	✓	✓	✓	✓

KANGAROO MEAT CUTS





PRIMAL CUTS BONE-IN

CARCASE BONE-IN WK1

Carcase includes all parts of the body skeletal, musculature and bone extending and including approximately 6 tail joints.



OPTIONAL SPECIFICATIONS:

CARCASE BONELESS WK2

Boneless carcase is prepared by the removal of all bones and cartilage.

FOREQUARTER BONE-IN WK3 (13-rib)

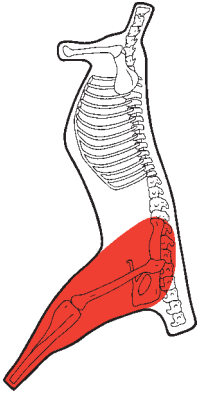
Prepared from a side and the Forequarter is removed by a straight cut commencing at the junction of the 1st lumbar and 13th thoracic vertebrae.

HINDQUARTER BONE-IN WK4 (0-rib)

Prepared from a side and the Hindquarter is removed by a straight cut commencing at the junction of the 1st lumbar and 13th thoracic vertebrae.

Points requiring specification:

- Carcase prepared into equal fore/hind quarter pieces.
- Removal of cuts to be specified.
- Rib number required.
- Length of tail retained.

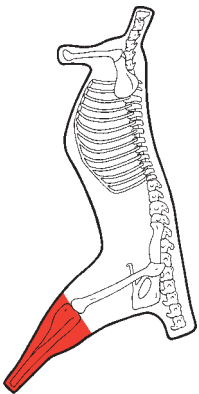


LEG RUMP-ON BONE-IN WK8

Leg Rump-on is removed from a carcass by a cut following the structure of the ilium and ischium bone and separating the leg from the side in one piece. The Leg Rump-on contains the tibia and femur bones.

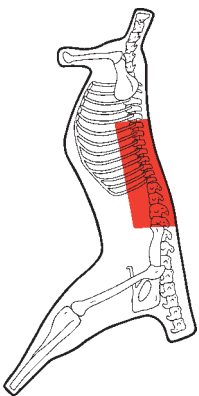
Points requiring specification:

- Flank: Retained or removed.
- Shank: Retained or removed.
- Rump: Retained or removed.



SHANK BONE-IN WK18

Shank is removed from the bone-in leg (item WK8) by a cut through the stifle joint between the junction of the tibia and the femur bones.



SADDLE BONE-IN WK23 (8-rib)

Saddle (8 rib) is prepared from a full carcass and is removed by a cut between the 5th and 6th lumbar vertebrae and the 5th and 6th rib. The flap is removed at a specified distance from the eye muscle along the ventral cutting line.

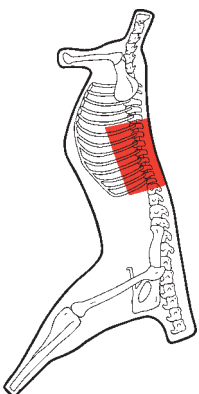
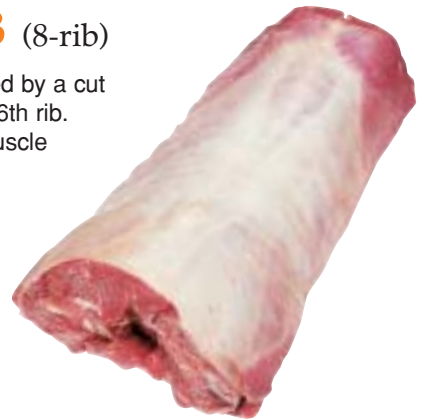
Optional:

SADDLE BONELESS WK24

All bones are removed and tenderloin tail is retained in situ.

Points requiring specification:

- Rib numbers required.
- Flap removal distance from eye muscle.



RACK BONE-IN WK21 (8-rib)

Rack (8 rib) is prepared from a side by a cut through the M. longissimus thoracis (eye muscle) between the 5th and 6th ribs and the junction of the 13th thoracic and 1st lumbar vertebrae. The ventral portion of the flap is removed at a specified distance from the eye muscle.

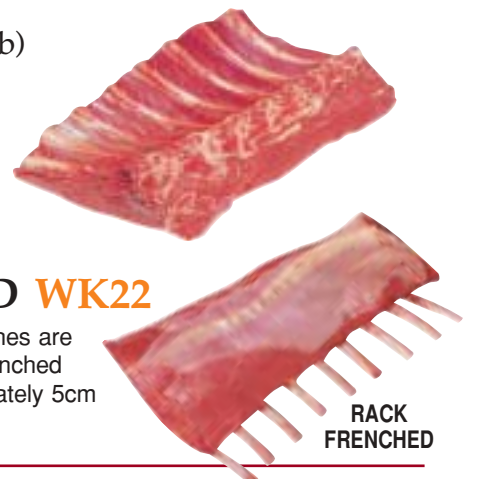
Points requiring specification:

- Ribs: Number of ribs required.
- Flap removal line and distance from eye muscle.
- Scapular cartilage removed.
- Feather/chine bones removed or retained.

Optional:

FRENCHED WK22

Chine and featherbones are removed, ribs are frenched trimmed to approximately 5cm from the eye muscle.



RACK
FRENCHED



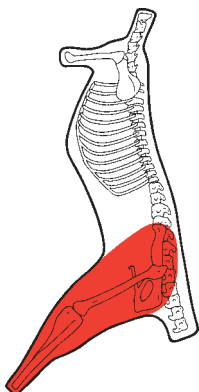
PRIMAL CUTS BONELESS

LEG RUMP-ON BONELESS WK9

Leg Rump-on is prepared from item WK8 by the removal of the tibia and femur bones.

Point requiring specification:

- Boning method:
Tunnel or seam bone.

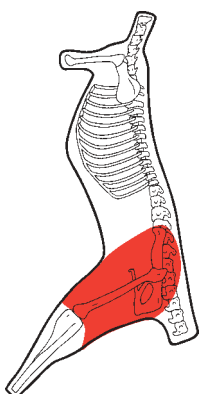


LEG RUMP-ON/SHANK-OFF BONELESS WK11

Leg Rump-on/Shank-off is prepared from item WK9 by the removal of the shank at the stifle joint.

Point requiring specification:

- Boning method:
Tunnel or seam bone.



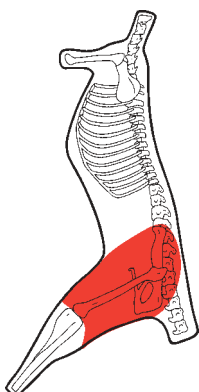
ROLLED & NETTED

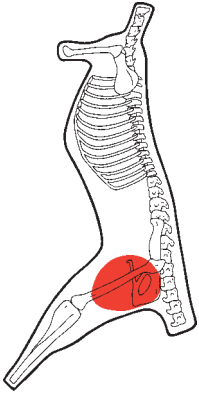
LEG RUMP-OFF/ SHANK-OFF BONELESS WK12

Leg Rump-off/Shank-off is prepared from item WK11 by the removal of the rump.

Point requiring specification:

- Boning method: Tunnel or seam bone.



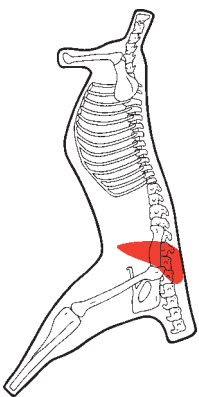


TOPSIDE WK14

Topside is prepared from a leg and is removed by following the natural seam between the knuckle and silverside.

Points requiring specification:

- Denuded: Remove silver skin/surface and accessible fats.
- Cap muscle: Retained or removed.

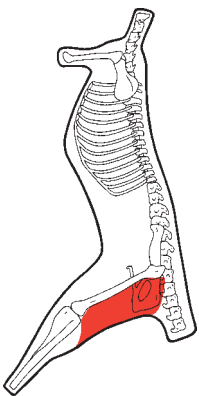


RUMP WK15

Rump is prepared from a leg and is removed by a straight cut commencing at the tip of the ilium bone, and parallel to the ventral and dorsal edges.

Point requiring specification:

- Denuded: Remove silver skin/surface and accessible fats.

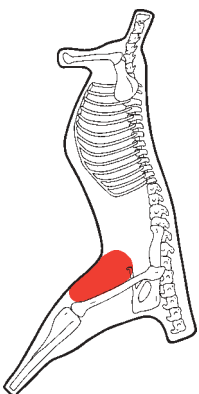


SILVERSIDE WK16

Silverside is prepared from a leg and is removed by following the natural seam between the knuckle and topside. The heel muscle (M. gastrocnemius) is removed.

Point requiring specification:

- Denuded: Remove silver skin/surface and accessible fats.



KNUCKLE (Round) WK17

Knuckle is prepared from a leg and is removed by following the natural seam between the topside and silverside.

Point requiring specification:

- Denuded: Remove silver skin/surface and accessible fats.





LOIN SET WK26

Loin Set is prepared from the Loin of the Hindquarter and is a combination of the following primals:
Striploin Pair WK27 - Loin Fillet WK28 - Long Fillet WK29.

STRIPLOIN PAIR WK27

Striploin pair is derived from a loin set (item WK26). The striploin pair is situated on the dorsal edge of the carcass vertebrae, commencing at the 1st lumbar to approximately the 5th sacral vertebrae. The striploin pair is removed in one piece.

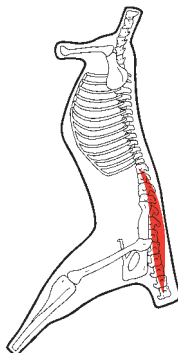
Point requiring specification:

- Silver skin retained or removed.

SKIN ON



DENUDED



STRIPLOIN - DENUDED WK31

Striploin is further prepared from striploin pair (item WK27) and is separated into 2 equal portions by cutting along the silver membrane running the length of the muscles. Each muscle is denuded to redmeat.

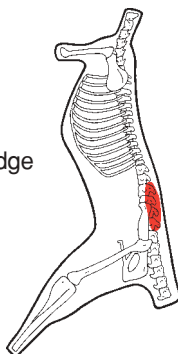


LOIN FILLET - SKIN ON WK28

Loin fillet is derived from a loin set (item WK26) and consists of 2 separate muscles situated on the dorsal edge of the carcass from the 3rd to 6th lumbar vertebrae.

Point requiring specification:

- Silver skin retained or removed.



LOIN FILLET - DENUDED WK32

Loin fillet is further prepared from item WK28 by removing all membrane covering the muscle.

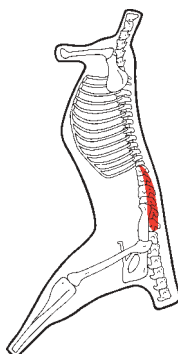


LONG FILLET - SKIN ON WK29

Long fillet is derived from a loin set (item WK26) and consists of 2 separate muscles lying either side of striploin pair on the dorsal edge of the carcass from the 1st to the 6th lumbar vertebrae.

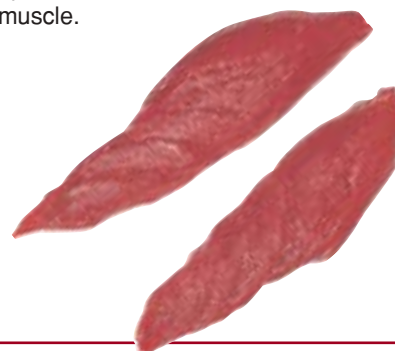
Point requiring specification:

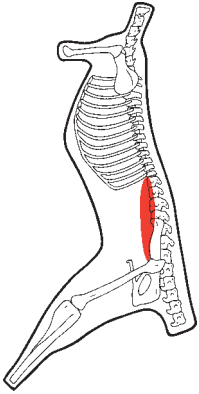
- Silver skin retained or removed.



LONG FILLET - DENUDED WK33

Long fillet is further prepared from item WK29 by the removal of all membrane covering the muscle.



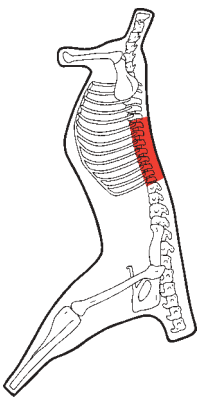


TENDERLOIN (Fillet) WK19

Tenderloin is derived from a side by removing the tenderloin in one piece from the ventral surface of the lumbar vertebrae.

Point requiring specification:

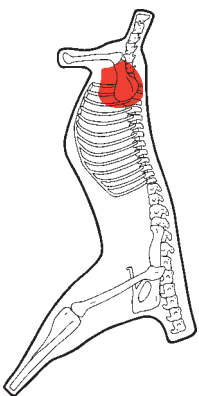
- Silver skin retained or removed.



RIB EYE FILLET WK20

Rib Eye Fillet is prepared from a side by a cut through the M. longissimus thoracis (eye muscle) between the 5th and 6th ribs and the junction of the 13th thoracic and 1st lumbar vertebrae. Rib Eye Fillet consists of the eye muscle portion lying along the thoracic process.

The Rib Eye Fillet is further prepared by removing all membrane covering the muscle surface.



SHOULDER (ROLLED) WK13

Shoulder is prepared from a side by a straight cut through the specified rib separating the forequarter and hindquarter. All bones, cartilage, ligamentum nuchae and lymph nodes are removed. The boneless shoulder is rolled and netted.

Point requiring specification:

- Rib number required.



MEAT STRIPS WK42

Meat strips are prepared from specified lean Kangaroo meat cuts and are sliced into strips by mechanical or manual methods. Connective tissue, fat and sinew are removed.

Point requiring specification:

- Dimension of meat strips required.



DICED MEAT WK43

Diced meat is prepared from lean Kangaroo meat. Connective tissue, fat and sinews are removed.

Points requiring specification:

- Preparation: Mechanical or manually diced.
- size of diced portions.





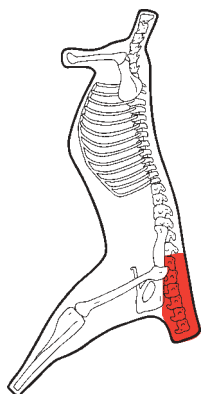
LEG CHOPS WK50



FOREQUARTER CHOP WK51



KANGAROO TAIL



TAIL WK37

Tail is removed from a carcass between the 6th and 7th tail joint.

Points requiring specification:

- Skin retained.
- Removal and tipped joints.

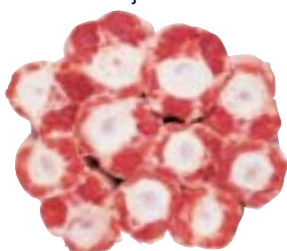


TAIL JOINTED WK38

Tail is prepared into portions by cutting through the joints.

Point requiring specification:

- Length of tail required by number of joints.



TAIL BUTT WK39

Tail butt consists of the portion of tail attached to the carcass from the 1st to the 6th tail joints.

Point requiring specification:

- Number of joints required.



TAIL SLICES WK41

Tail slices are prepared from the tail butt and cut into slices of equal thickness.

Point requiring specification:

- Thickness of slices.





MANUFACTURING

MANUFACTURING MEAT WK36

Manufacturing Kangaroo meat packs consists of boneless forequarter meat and residue meats remaining after the preparation of primals, carcass or portions of a carcass.

Point requiring specification:

- Specify lean content.



MINCE WK44

Mince is prepared from specified lean boneless Kangaroo meat.

Points requiring specification:

- Specify lean content.
- Packaging details.
- Plate size for mincing.



PROCESSED PRODUCTS WK46

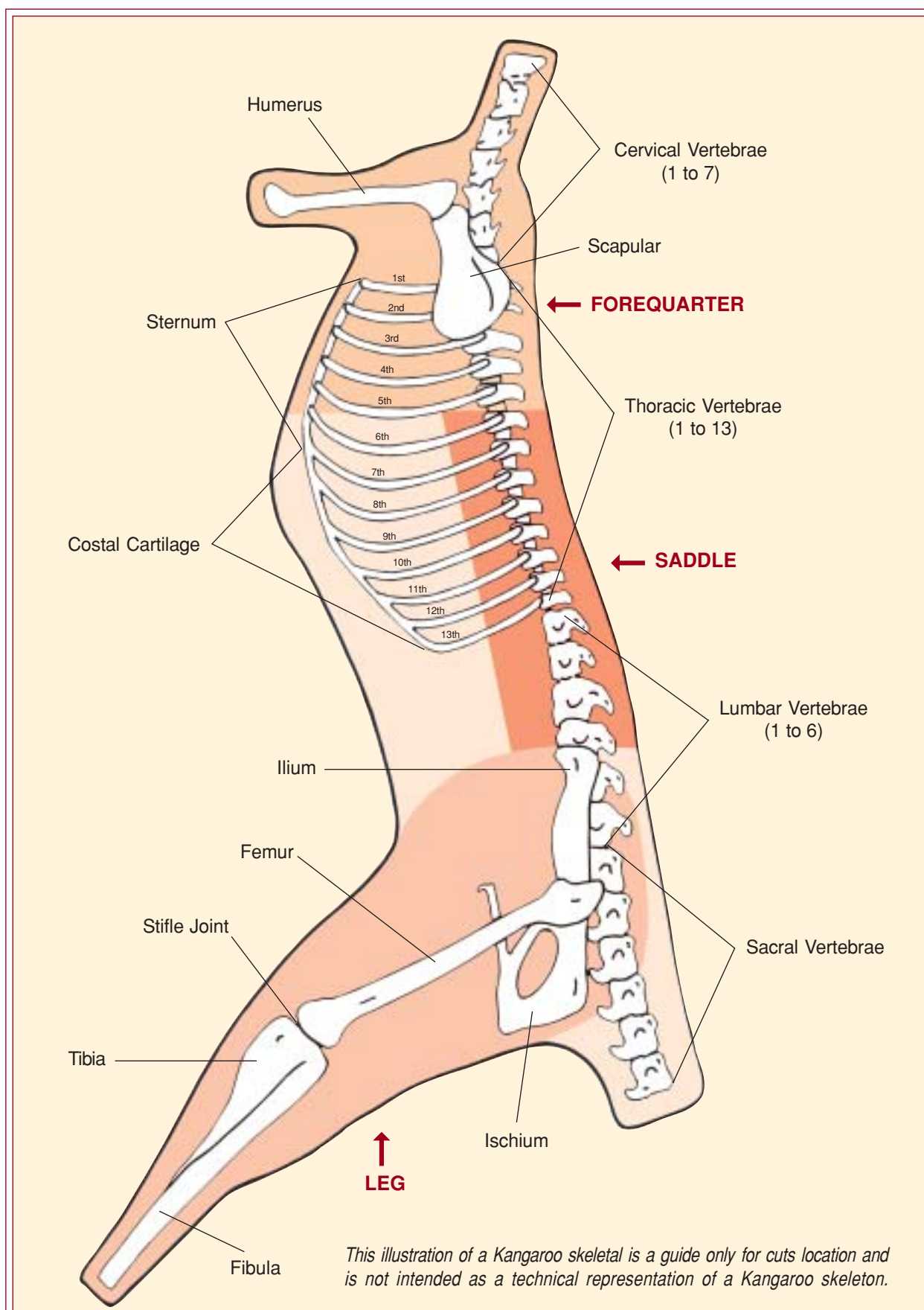
- Sausages
- Crumbed steaks
- Burger patties



Kangaroo as a manufacturing meat for use in small-goods has a chemical lean content of 99.1% whereas Kangaroo primal cuts are 99.5% lean content. These percentages are from a Government Laboratory "Certificate of Analysis Analytical Results" on Kangaroo product. Kangaroo meat is great when used for manufacturing/ further processing and is very high in lean content and water retention.



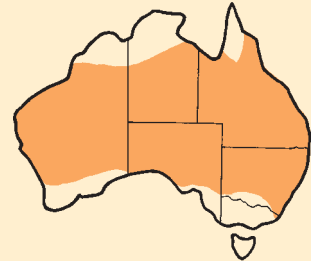
SIDE SKELETAL DIAGRAM



DISTRIBUTION AREAS OF THE FIVE MOST ABUNDANT KANGAROO SPECIES

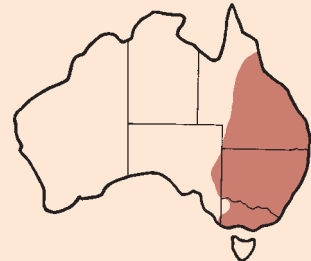
Wallaroos or Euros

Wallaroos or Euros (*Macropus robustus*) are found in steep, rocky areas over much of mainland Australia. Euros are the reddish, inland form of the Wallaroos which occur around the Great Dividing Range of Eastern Australia. Their feeding areas include grazing lands, where they compete with domestic stock.



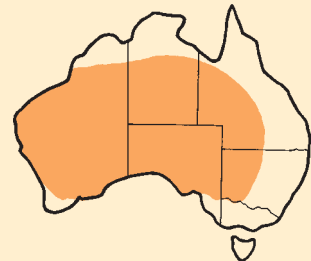
Eastern Grey Kangaroos

Eastern grey Kangaroos (*Macropus giganteus*) are found in habitats ranging from semi-arid mallee scrub through woodland to forests, including, the most densely populated and farmed areas in eastern Australia. When abundant, they are regarded as pests. They are also found in north-eastern Tasmania where they are known as foresters.



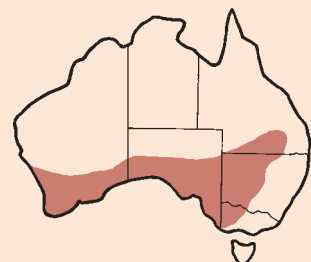
Red Kangaroos

Red Kangaroos (*Macropus rufus*) prefer the open plain and mallee country of the arid inland. They graze on grasses and other soft plants. In rangeland areas they compete with domestic livestock for food and water.



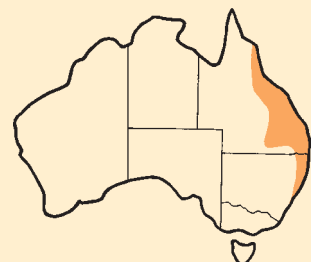
Western Grey Kangaroos

Western grey Kangaroos (*Macropus fuliginosus*) occur in southern Australia in open forest and woodland and in scrub and heath that has tree cover nearby. Their distribution overlaps agricultural areas, in particular, the wheat belts of New South Wales and Western Australia.



Whiptail Wallabies

Whiptail wallabies (*Macropus parryi*) prefer the open forests or woodlands with grass cover that are found in mountainous or hilly country in eastern Queensland and north-eastern New South Wales. They live together in groups of up to 50. They separate to feed at dusk, often into farmland areas where they can damage crops and pastures.





Stir Fry Kangaroo Rump



KANGAROO INDUSTRIES ASSOCIATION AUSTRALIA