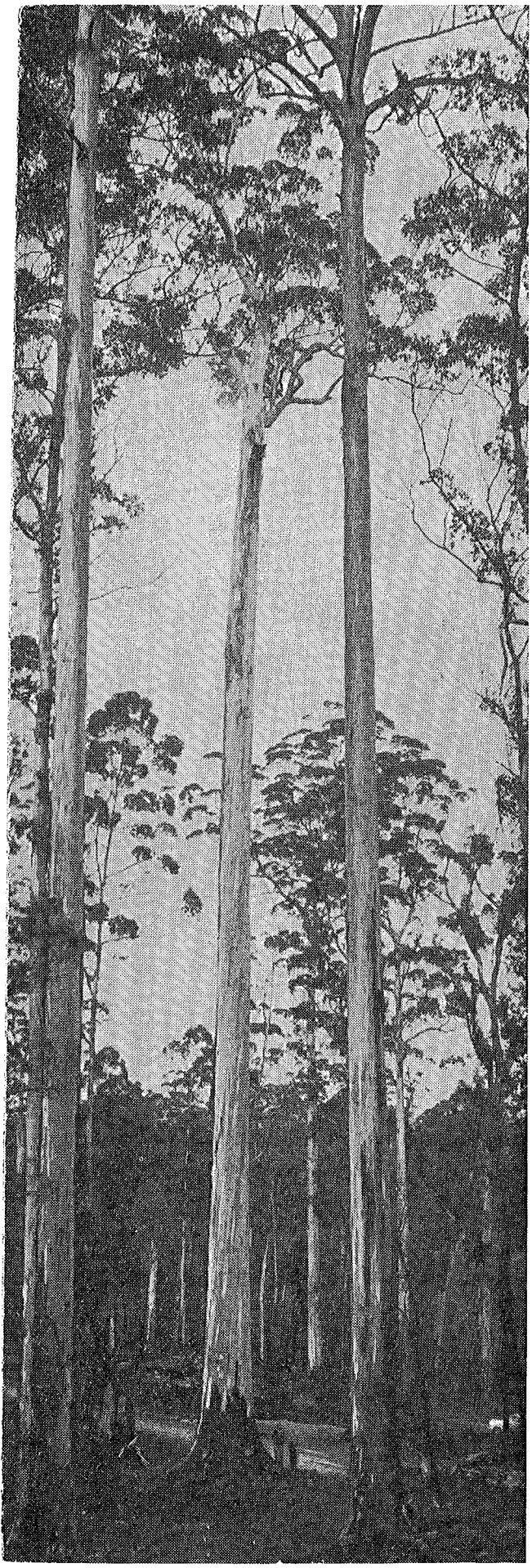

Leaflet No. 2
(revised)

Western Australia Forests Department

K A R R I

Karri Forest
Shannon River
W.A.

Photo by Courtesy of
W.A. Newspapers Pty. Ltd.

Dimensions of Centre Tree—

Girth at 4 ft. 3 in. . . .	31 ft. 4 in.
Bole length	165 ft.
Total height	270 ft.

KARRI

(Eucalyptus diversicolor, F.v.M.)

INTRODUCTION

Karri is the largest tree in the Western Australian forests and is second only to jarrah in importance. Karri ranks among the tallest of the eucalypts, and trees of up to 286 ft. in height are growing in the south-west. The famous Gloucester Tree with its fire lookout 200 ft. from the ground, is perhaps the best known of this species, and is situated 2 miles from Pemberton in the heart of the karri country. The tall and stately trees of this district provide one of the leading tourist attractions of the State.

The bole of one magnificient karri was hauled 190 miles to Perth to celebrate Timber Week and now rests in King's Park. The total height of the tree from which it was taken was 200 ft., the marketable log 106 ft., and the butt girth 25 ft.; while another felled at Karridale had the following dimensions:—

34 ft. in circumference at three feet from the ground.
160 ft. to the first limb.
14 ft. in circumference at the first limb.
Over 200 ft. in total height.

From these figures it can be shown that the bole of this tree from the bottom to the first limb contained nearly 7,500 cu. ft. of timber, weighing over 230 tons.

HABIT AND DISTRIBUTION

Karri occurs as a pure formation, or as a mixed forest with marri, *(Eucalyptus calophylla,* R.Br.), in the higher rainfall regions of the south-west of Western Australia. The major karri area is bounded by Nannup and the upper waters of the Donnelly River in the north, and thence extends south-eastwards to Denmark. Isolated patches, however, occur further east and west of the main belt near the Porongorup Range and Hamelin Bay respectively. The prime forest covers an area of approximately 500,000 acres, most of which has been dedicated as State Forest.

TIMBER PROPERTIES

Density:

Green	72 lb./cu. ft.
Dry (12 per cent. moisture content)	57 lb./cu. ft.

Shrinkage: To 12 per cent. M.C. before reconditioning:—

Tangentially	9.9 per cent.
Radially	4.3 per cent.

Strength Group: C.S.R.I.O. strength group B.

General Characteristics:

Karri is a hardwood varying from pale pink to deep red. It is hard, heavy, stiff and tough, and considerably stronger than Douglas fir and English oak. It is an exceptionally good bending timber.

Seasoning:

The timber responds well to kiln drying and suitable drying schedules are available.

Durability:

Karri is rated as durability class 3 by the Division of Forests Products, C.S.I.R.O. It finds ready use for practically all building and construction purposes, if suitable provision is made for protection from termites (where they constitute a hazard), and if adequate ventilation is maintained.

It is used in building construction throughout the State, and houses built entirely of this timber have been in existence for over 50 years in the lower south-west.

DISTINCTION BETWEEN KARRI AND JARRAH TIMBER

Jarrah and karri timbers are very similar in appearance, and it is often difficult to differentiate between the two. A common test is to burn a splinter of the wood and note the result. Jarrah burns to a black charcoal, but with karri the red-hot coal continues to glow until a true white ash is produced. It should be noted that this test should be applied only to sound heartwood, as jarrah heartwood which has been exposed to weathering conditions and jarrah sapwood may both give a white ash. However, jarrah always shows a black char beneath the white ash, while karri gives a white ash only.

The Forests Department maintains a timber inspection service for the benefit of buyers who wish to have timber certified true to name and up to specification. To inspectors, experienced in handling these species, the timbers are quite distinct, and the possibility of error remote.

USES

Structures:

The uses of karri are numerous. The strength and stiffness of the timber, combined with the extraordinarily long, clean lengths which may be obtained, render it unsurpassable for superstructural work. It is possible to secure karri in larger sections and longer lengths than any other known hardwood. In beams, rafters, columns, warehouse floor joists, and other members, where strength is the essential factor, it gives every satisfaction. It may be mentioned that, in one of the mills in the karri forest, the roof is carried by two trusses with a common tie beam consisting of a piece of 12 in. by 12 in. karri, 80 ft. in length. In many instances karri has replaced oregon for scaffolding planks, where its greater strength has more than offset the increase in weight. In bridge construction it is used for half caps and decking. The timber is highly prized for transmission line cross-arms, and is also used to a considerable extent for coach, wagon and motor body building.

In the gold mines of Western Australia, karri is used for many purposes, while large quantities have been exported to Johannesburg where its use is particularly favoured as guides or sliding beams. Reports have shown that, under conditions of heavy wear, it has a much longer life for this purpose than pitch pine and other timbers previously tested.

Crossarms:

Large quantities of karri have been used for many years by the Postmaster General's Department for telephone crossarms and these have given good service. With the setting up of a 1,000 pounds per square inch pressure impregnation plant at Pemberton, crossarms are now being treated with 3 per cent. pentachlorphenol in oil and are expected to give even better service. The hazard from termite and fungus attack in a crossarm is low but the oil impregnation is worth while in reducing the weather checking that can occur in a hot, dry climate. Treated karri crossarms are now being used throughout Western Australia and are being exported to other States.

Plywood:

In 1944 the plywood industry was established in Western Australia using selected karri logs. Although used initially for all classes of plywood, especially 3-ply, the main use of karri veneer today is for multi-ply waterproof sheets. This type of product is in great demand for concrete form work, because of its great strength and resistance to wear. Karri plywood is also used for truck flooring, and any requirement where strength is an important factor.

Flooring:

In recent years it has become increasingly popular as a flooring timber in the eastern states of Australia, where attractively packaged supplies from Western Australia are readily available.

Cases, Vats, Casks, and Pipes:

Until partially replaced by cartons, fruit cases were produced annually to carry the apple crop to England. Karri has also been used for wine vat and cask manufacture and for wood pipes and flumes.

Shipbuilding:

Karri is on Lloyd's list of shipbuilding timbers, and, before the days of steamships, vessels built wholly of this timber were constructed in Western Australia. At Hamelin Harbour, from which the produce of the early Karridale sawmills was exported, quite a fleet of large lighters, built entirely of karri was employed. In shipbuilding in later times, the wood has been used largely for keelsons, and the long lengths obtainable are regarded by shipbuilders as an added advantage for this work.

Pulp:

The timber has been pulped successfully on an experimental scale and as early as 1923 a paper was produced from a mixture of 70 per cent. karri pulp and 30 per cent. imported sulphite pulp.

AVAILABILITY

Managed under a policy of sustained yield karri will always be available in substantial quantities. It is a valuable naural asset in the State's economy.

KARRI STRENGTH AND PROPERTIES

(Tests on small clear specimens)

	Green	12% M.C.
Density	72 p.f.c.	57
Static Bending, centre loading—		
F.S. at prop. limit	6,600 p.s.i.	11,600
Mod. of Rupture	10,600 p.s.i.	19,200
Mod. of elasticity x .001	2,070 p.s.i.	2,760
Compression Parallel—		
F.S. at prop. limit	4,180 p.s.i.	7,260
Max. crushing str.	5,250 p.s.i.	10,400
Mod. of elasticity x .001	2,200 p.s.i.	2,980
Compression Perpendicular—		
F.S. at P.L. on 6 x 2 x 2 spec.		
Radial	956 p.s.i.	1,280
Tangential	1,260 p.s.i.	1,800
F.S. at P.L. on 2 x 2 x 2 spec.		
Radial	630 p.s.i.	910
Tangential	844 p.s.i.	1,520
Hardness, Janka ball test—		
Radial	1,400 p.	2,030
Tangential	1,320 p.	2,030
End	1,370 p.	1,980
Torsion—		
F.S. at prop. limit	959 p.s.i.	1,330
Max. Tors. Shear Str.	1,810 p.s.i.	2,470
Mod. of Rigidity x .001	106 p.s.i.	143
Shear—		
Max. Stress Radial	1,210 p.s.i.	1,810
Max. Stress Tangential	1,460 p.s.i.	2,460
Cleavage—		
Max. Strength Radial	366 p.i.	236
Max. Strength Tangential	460 p.i.	428
Impact Bending Strength—		
Denison Radial	200 i.p.	222
Denison Tangential	201 i.p.	194
Izod Radial	15.2 f.p.	19.1
Izod Tangential	15.4 f.p.	17.0

Shrinkage, green to 12% M.C.	Before Reconditioning	After
Radial	9.9	8.5
Tangential	4.3	4.0

Prepared under the direction of A. C. Harris—Conservator of Forests.

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