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INITIAL REPORT ON THE PROPERTIES OF PAULOWNIA TIMBER GROWN AT THE EFF GROUP'S NOWERGUP RESEARCH PLANTATION

May 2007

Highpoint Timbers commissioned a number of reports over the past 6 months to investigate and document the properties of Paulowna timber extracted from EFF Group's Nowergup Research Plantation.

The EFF Group supplied samples of *Paulownia fortunei* timber, specifically of the variety **'EFF1'** which is a registered variety under the Plant Breeder's Rights Act.

The Forest Products Commission of Western Australia tested the density and stability of the timber, whilst Structural Testing Services, a University of Southern Queensland based organisation, tested strength properties.

The results of these most recent tests have been compared to the results of tests conducted in 2001 and 2002 by both the FPC and the University of Southern Queensland on Paulownia timber obtained from China and Queensland . The results and comparisons are detailed below.

Age

Table 1 shows the ages of timber used in the testing.

Timber Type	Age
WA Grown	6 years
QLD Grown	10 years
Chinese Grown	Unconfirmed

Table 1 - Age of Timber

Species

EFF used timber from the *Paulownia fortunei* species, specifically, from tissue cloned from the 'EFF1' variety registered under Plant Breeder's Rights intellectual property law. Data obtained on Chinese grown Paulownia is specific to *Paulownia elongata*. The species of the Queensland grown Paulownia is unknown.

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Density

The density of the timber was measured on two separate occasions. Firstly in 2001 on timber obtained from Queensland and more recently on timber grown in Western Australia. Data on Chinese grown Paulownia has been obtained from scientific journals.

Timber Type	Green Density	Air Dry Density
WA Grown	640kg/m3	330kg/m3
QLD Grown	-	260kg/m3
Chinese Grown		290kg/m3

Table 2 - Density of timber

The data shows WA grown Paulownia is slightly more dense than both Queensland and Chinese grown Paulownia.

Stability

Shrinkage of the Queensland and Western Australian timber was also measured on the two separates occasions. It is summarised in Table 2 below. Data on Chinese grown Paulownia is also shown:

Timber Type	Tangential Shrinkage	Radial Shrinkage
WA Grown	4.5%	1.5%
QLD Grown	6.8%	Not tested
Chinese Grown	4.4%	2.0%

Table 3 - Stability

Strength

The density of the timber was measured on two separate occasions. Firstly in 2002 on timber obtained from China and more recently on timber grown in Western Australia. No data on Queensland grown Paulownia timber is available.

Timber Type	Peak Stress	Flexural Modulus
WA Grown	52.88 MPa	5569 MPa
QLD Grown	Not tested	Not tested
Chinese Grown	20.9 MPa	3321 MPa

Table 4 - Bending Strength

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Timber Type	Peak Stress	Shear Modulus
WA Grown	2.63 MPa	9.67 MPa
QLD Grown	Not tested	Not tested
Chinese Grown	2.91 MPa	9.3 MPa

Table 5 - Shear Strength

Conclusion

Timber obtained the EFF Group's Nowergup Plantation in Western Australia of the species *Paulownia fortunei* and variety 'EFF1' performs better in all areas tested than both the Chinese grown and Queensland grown Paulownia timber.

The results of these tests lead us to conclude that Western Australian grown Paulownia timber can be used in all applications where Chinese grown timber is currently used and can be expected to perform as good and if not better in these situations.

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