

**WOOD SUPPLY
AGREEMENT
(Pulplog)**

**ALLEN TAYLOR & CO
LIMITED**

May 2004

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WOOD SUPPLY AGREEMENT

THIS AGREEMENT is made on the **25th** day of **JUNE** 2004

BETWEEN The **FORESTRY COMMISSION OF NEW SOUTH WALES**, a corporation constituted under the Forestry Act 1916 (NSW) trading as **STATE FORESTS ('STATE FORESTS')**;

AND **ALLEN TAYLOR & CO LIMITED (ABN 39 000 003 056)**, part of the Boral Timber Division, an administrative division of Boral Limited. ('**Company**')

1. DEFINITIONS AND INTERPRETATIONS:

1.1 Definitions:

In this Agreement unless a contrary intention appears:

'**Act**' means the *Forestry Act 1916* (NSW);

'**Additional Resource**' means pulpwood that State Forests proposes to make available for sale from the Area of Supply that is surplus to State Forests' commitments (such commitments to include the Annual Supply) where pulpwood is timber suitable for the manufacture of reconstituted wood products but unsuitable for the manufacture of solid sawn wood products;

'**Additional Supply**' for a Year means the quantity of Timber determined as the Additional Supply for that Year in accordance with **clause 5**;

'**Agreement**' means this agreement;

'**Annual Delivery Plan**' means the plan, prepared by State Forests in accordance with **clause 8**, for the supply of Timber during the Year to which the plan applies;

'**Annual Supply**' for a Year means the total of the Base Supply and the Additional Supply for that Year;

'**Area of Supply**' means the Crown timber-lands within State Forests North East, Mid North Coast and Hunter Regions more particularly identified on the map attached as **Schedule 2**;

'**Base Supply**' for a Year means the quantity of Timber specified as the Base Supply in **Schedule 3** for the Year except for a Year following a Year in which an Undercut occurred (for reasons other than Force Majeure or default on State Forests part) in which case the Base Supply for the Year means the total of:

- (a) the quantity of Timber specified as the Base Supply in **Schedule 3** for the Year and
- (b) the lesser of:
 - (i) the Undercut; or
 - (ii) ten (10) percent of the Annual Supply for the Year in which the Undercut occurred;

'**Base Supply Distribution**' is the indicative geographic distribution of the source of Base Supply for a Year by State Forests region specified in **Schedule 3**.

'**Business Days**' means the days Monday to Friday inclusive, but excluding Public Holidays;

'Change in Control' means change in the control of more than fifty (50) percent of the shares with the right to vote in general meetings of the Company;

'Code of Procedure' is as set out in **Schedule 6** as amended from time to time in accordance with this Agreement;

'Commencement Date' means 1 January 2004;

'Company' includes all employees, servants and agents of the Company;

'Compartment' means an administrative area within a Management Area identified by State Forests as a Compartment from which State Forests may make a supply of Timber available to the Company;

'Contract Harvesting' includes the felling, extraction, sorting, processing, grading, loading, hauling and delivery of Timber to the Delivery Sites and ancillary works including roading, tracking, log dump construction and site rehabilitation by Contractors engaged by State Forests;

'Contract Harvesting Agreement' means an agreement in writing between State Forests and a Contractor providing for the Contractor to carry out Contract Harvesting or any part thereof;

'Contractor' means a person under contract with State Forests to conduct Contract Harvesting operations and includes employees and agents of the Contractor;

'Cost Item' – see **Schedule 5**;

'Delivered Prices' means the prices payable by the Company per tonne of Timber delivered to the Company under this Agreement inclusive of all charges and levies calculated in accordance with **clauses 14 and 15**;

'Delivered Price Review Mechanism' means a mechanism for the annual review of Delivered Prices set out in **Schedule 5** as amended or replaced from time to time in accordance with this Agreement;

'Delivery Sites' means the chipping facilities located at a number of locations on the North Coast as set out in **Schedule 4** or such other location as the parties agree upon in writing;

'Force Majeure' means an event (other than the payment of money) arising from an act of God, industrial dispute, act or omission of government or government department instrumentality (except State Forests), war, sabotage, riot, civil disobedience, epidemic, disease, flood, fire, explosion, failure of power supply, accident, natural disaster, calamity or unlawful act by other persons, or any similar cause which prevents a party from performing its obligations (in whole or in part) under this Agreement;

'Indicator' – see **Schedule 5**;

'Indicator Rates' – see **Schedule 5**;

'Indicator Weighting' – see **Schedule 5**;

'Insolvency Event' means in respect of a party:

- (a) a receiver, manager, receiver and manager, trustee, administrator, controller or similar officer being appointed in respect of the party or any asset of the party;
- (b) a liquidator or provisional liquidator being appointed in respect of the party;
- (c) a moratorium of any debts of the party or an official assignment or a composition or an arrangement (formal or informal) with the party's creditors or any similar proceeding or arrangement by which the assets of the party are subjected

- conditionally or unconditionally to the control of the party's creditors being ordered, declared or agreed to;
- (d) the party becoming, or admitting in writing that it is, or being declared to be insolvent or unable to pay its debts;
 - (e) any writ of execution, garnishee order or similar order, attachment, distress or other process in an amount exceeding \$10,000,000 (or its equivalent in a foreign currency) being made, levied or issued against or in relation to any asset of the party (which is not stayed, withdrawn or satisfied within 14 days of when it is made, levied or issued);
 - (f) the party suspending payments of its debts generally; or
 - (g) the party being, or under legislation being presumed or taken to be, insolvent (other than as the result of a failure to pay a debt or claim the subject of a good faith dispute);

'Kappa 18' means 18 millilitres of 20 mmol/l (0.1N) potassium permanganate solution consumed by one gram of moisture free pulp under the conditions specified by Schedule 7.

'Management Area' means an area of land designated as a 'Management Area' on the map attached as **Schedule 2**;

'Monthly Delivery Schedule' means a schedule for the month to which it applies, specifying information described in **clause 9**;

'Monthly Quantity' means the quantity specified in a Monthly Delivery Schedule as the quantity to be delivered in the month to which the Monthly Delivery Schedule applies;

'Overcut' means the amount by which the actual quantity of Timber taken by the Company in a Year is more than the Annual Supply for the Year;

'Related Body Corporate' shall have the same definition as given to "related body corporate" in the Corporation Act 2001.

'Specifications' means the specifications for timber set out in **Schedule 1**;

'State Forests Region' means either Hunter Region, Mid North Coast Region or North East Region more particularly identified on the map attached as **Schedule 2**;

'Term' means the term of this Agreement;

'Threshold Supply' for a Year means eighty (80) percent of the Annual Supply for that Year;

'Timber' means timber which meets the Specifications set out in **Schedule 1**;

'Undercut' means the amount by which the actual quantity of Timber taken by the Company in a Year is less than the Annual Supply for the Year;

'Year' means a period of twelve (12) months commencing on 1 January.

1.2 Interpretation

In this Agreement, unless the context requires otherwise:

- 1.2.1 a reference to the Act includes all amendments, regulations, rules, by-laws and proclamations under the Act;
- 1.2.2 words and phrases defined in the Act will have the same meanings attributed to those words and phrases in the Act unless the word or phrase is defined in this Agreement in which case the word or phrase will have the meaning attributed to it in this Agreement;

- 1.2.3 headings are for convenience only and do not affect the interpretation of the Agreement;
- 1.2.4 words importing the singular include the plural and vice versa;
- 1.2.5 words importing a gender include any gender;
- 1.2.6 a reference to a natural person includes a Company, partnership, joint venture, association, corporation or other body corporate and any governmental agency;
- 1.2.7 a reference to any thing includes a part of that thing;
- 1.2.8 a reference to a clause, party, annexure, exhibit or schedule is a reference to a clause of and a party, annexure, exhibit and schedule to this Agreement;
- 1.2.9 a reference to a document includes all amendments or supplements or replacements or notations of that document;
- 1.2.10 a reference to a party to a document includes that party's successors and permitted assignees;
- 1.2.11 no rule of construction applies to the disadvantage of a party because that party was responsible for the preparation of this Agreement or any part of it;
- 1.2.12 a reference to dollars or \$ is a reference to the lawful currency of the Commonwealth of Australia;
- 1.2.13 a schedule that forms part of this agreement can be varied with mutual consent by both parties without varying any further condition or schedule of the contract;
- 1.2.14 a reference to a statute, ordinance, code or other law includes regulations and other statutory instruments under it and consolidations, amendments, re-enactments or replacements of any of them (whether of the same or any other legislative authority having jurisdiction);
- 1.2.15 a reference to the Company taking Timber is a reference to the Company accepting delivery of Timber delivered by State Forest to a Delivery Site.

2. SCOPE OF AGREEMENT

- 2.1 Subject to the terms and conditions set out in this Agreement:
 - 2.1.1 Each Year State Forests agrees to supply the Annual Supply to the Company from the Area of Supply;
 - 2.1.2 The Company agrees to purchase the Annual Supply at the prices specified in **clauses 14 and 15**.

3. COMMENCEMENT AND DURATION OF AGREEMENT

- 3.1 This Agreement will take effect from the Commencement Date and operate until 31 December 2007 unless extended or sooner terminated in accordance with this Agreement.

4. SPECIES AND SOURCE

- 4.1 State Forests will use reasonable endeavours to ensure the species and source of the Annual Supply will enable the Company to supply woodchip derived from it to its customers that achieves an average forty nine (49) percent pulp yield at kappa 18.

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5. ADDITIONAL SUPPLY

- 5.1 From time to time the parties may agree in writing after negotiating in good faith that State Forests will supply the Company with a quantity of Timber in a Year in excess of the Base Supply which may exceed the Base Supply by up to 100,000 tonnes.
- 5.2 The price, species and source of any quantity in excess of the Base Supply will be as agreed by the parties.

6. SHORTFALL MANAGEMENT

- 6.1 In any Year the Company may request (and State Forests must use reasonable endeavours to supply) more than the Annual Supply or take less than the Annual Supply in accordance with the following conditions:
- 6.1.1 in any Year the quantity of Timber taken by the Company must not exceed 110 percent of the Annual Supply;
 - 6.1.2 in any Year the minimum quantity of Timber taken during that Year must not be less than the Threshold Supply;
 - 6.1.3 the Company gives:
 - (a) not less than 6 months advance notice in writing to State Forests of an intended Overcut; and
 - (b) not less than 3 months advance notice in writing to State Forests of an intended Undercut.
- 6.2 The Company is not entitled to an Undercut or Overcut except in accordance with the conditions set out in **clause 6.1**.
- 6.3 If, for any reason other than Force Majeure or default on the part of State Forests, the Company takes less than the Threshold Supply in any Year, the Company will pay to State Forests an amount equivalent to 35% of the Delivered Price payable on the quantity of Timber being the difference between the Threshold Supply and the Timber taken by the Company in that Year. The Delivered Price per tonne for that difference will be the average Delivered Price paid by the Company in that Year calculated by dividing the total Delivered Price paid by the quantity delivered to all Delivery Sites in that Year or if the Company did not pay for Timber that Year then the average Delivered Price which would have been payable had the Company taken the Threshold Supply.
- 6.4 Payment due under **clause 6.3** must be made on or before 28 February in the Year following the Year in which the liability arose. Such payment is payable as pre-estimated and liquidated damages and not as a penalty.
- 6.5 The parties acknowledge that the Company's obligation to pay the liquidated damages under **clause 6.3** in relation to a particular Year has been provided in this Agreement to offset a reciprocal liability State Forests may have in that Year under Contract Harvesting Agreements. State Forests will use reasonable endeavours to limit its said reciprocal liability under the relevant Contract Harvesting Agreements as a result of the Company's failure to take Timber under this Agreement. If the Company makes payment in accordance with **clause 6.3**:
- 6.5.1 State Forests must as soon as practicable ascertain whether it has any such reciprocal liability and within 30 days of so ascertaining:
 - (a) provided the reciprocal liability is less than the amount paid under **clause 6.3**, refund the difference; and
 - (b) provide the Company with evidence of its reciprocal liability.
 - 6.5.2 State Forests may make no further claim against the Company in respect to the reciprocal liability.
- 6.7 If for reasons other than Force Majeure or default on the part of State Forests, the Company fails to purchase Timber of a quantity equal to or greater than:
- 6.7.1 90% of the Base Allocation for 2 consecutive Years on 2 or more occasions; or
 - 6.7.2 80% of the Base Allocation in any one Year,

State Forests may treat the failure as a material breach of this Agreement and terminate this Agreement in accordance with **clause 28.1.2**.

7. METHOD OF SUPPLY

- 7.1 State Forests will make available the Annual Supply for each Year by undertaking Contract Harvesting and delivering the Timber to the Delivery Sites.
- 7.2 For the purposes of its compliance with its obligations to make the Annual Supply available to the Company in any Year, State Forests will be deemed to have made available that quantity which it is ready willing and able to make available by Contract Harvesting and not any lesser quantity which it actually makes available at the request of the Company.

8. ANNUAL DELIVERY PLAN

- 8.1 The Annual Delivery Plan:
- 8.1.1 must be based on the Annual Supply, or other such lesser quantity agreed by the parties;
 - 8.1.2 must take into account any relevant information provided by the Company including shipping schedules;
 - 8.1.3 must set out indicative information regarding the Monthly Quantities during the Year to which it applies;
 - 8.1.4 must set out indicative information regarding the quantities to be delivered to each Delivery Site from each State Forests Region;
- 8.2 State Forests and the Company must as soon as practicable after the date of this Agreement, confer and negotiate in good faith to reach agreement on an Annual Delivery Plan for the Year of the Commencement Date. In default of agreement, the Annual Delivery Plan will be determined by State Forests in accordance with the matters referred to in clause 8.1 and otherwise providing for Timber to be delivered:
- 8.2.1 in Monthly Quantities of approximately nine (9) percent of the Annual Supply for the months of February through to November inclusive and five (5) percent of the Annual Supply for the months of January and December;
 - 8.2.2 to each Delivery Site in the indicative proportions set out in **Schedule 4**;
 - 8.2.3 from each State Forests Region so as to minimise haulage costs incurred by State Forests.
- 8.3 Not later than 31 October in each Year, State Forests and the Company must confer and negotiate in good faith to reach agreement on an Annual Delivery Plan for the following Year. In default of agreement, the Annual Delivery Plan will be determined by State Forests in accordance with the matters referred to in **clause 8.1** and otherwise providing for Timber to be delivered:
- 8.3.1 in Monthly Quantities of approximately nine (9) percent of the Annual Supply for the months of February through to November inclusive and five (5) percent of the Annual Supply for the months of January and December; and
 - 8.3.2 to each Delivery Site in the indicative proportions set out in **Schedule 4**; from each State Forests Region so as to minimise haulage costs incurred by State Forests.
- 8.4 Not later than 30 April in each Year, State Forests and the Company must confer and negotiate in good faith to review the Annual Delivery Plan for the Year. In default of agreement on any changes, the Annual Delivery Plan referred to in **Clause 8.3** will apply.
- 8.5 If either party requests an amendment of the Annual Delivery Plan, the parties must confer and negotiate in good faith to reach agreement on an amended Annual Delivery Plan. In default of agreement the original Annual Delivery Plan shall continue to apply.

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9. MONTHLY DELIVERY SCHEDULES

- 9.1 The Monthly Delivery Schedule:
- 9.1.1 must be based on, but not bound to, the indicative information in the Annual Delivery Plan for the month to which it applies;
 - 9.1.2 must state the Monthly Quantity for the month to which it applies;
 - 9.1.3 must state the quantity to be delivered to each Delivery Site from each State Forests Region;
 - 9.1.4 must include any special delivery requirements the Company may have for that month, as agreed between the parties.
- 9.2 No later than seven (7) days prior to the commencement of each calendar month the parties must confer and negotiate in good faith to reach agreement on a Monthly Delivery Schedule for that month. In default of agreement, the Monthly Delivery Schedule will be determined by State Forests in accordance with the matters referred to in **clause 9.1** and otherwise providing for approximately equal Monthly Quantities. State Forests must provide the Company with the Monthly Delivery Schedule determined by it not less than two (2) Business Days prior to the commencement of the month to which it applies. Any determination by State Forests must, as far as is reasonably practicable, take into account the current market requirements of the Company.
- 9.3 If either party wishes to vary a Monthly Delivery Schedule during the month to which it applies, the party must notify the other as soon as practicable and the parties must negotiate in good faith to reach agreement on an amended Monthly Delivery Schedule. In default of agreement the original Monthly Delivery Schedule shall apply.

10. AMENDING OF ANNUAL DELIVERY PLAN OR MONTHLY DELIVERY SCHEDULE

- 10.1 Where any timber in a Compartment has been damaged or destroyed by fire, disease or other natural cause or access to a Compartment intended to supply the Annual Supply is otherwise prevented by Force Majeure, State Forests may, after consultation with the Company, amend any Annual Delivery Plan or Monthly Delivery Schedule as it deems necessary to facilitate salvage operations or to adjust to the unavailability of timber in Compartments.

11. DELIVERY

- 11.1 The Company must accept Timber delivered to the Delivery Sites by State Forests substantially in accordance with the Monthly Delivery Schedule;
- 11.2 Unless otherwise agreed by the parties, Timber may be delivered to the Delivery Sites at any time during the delivery hours set out in **Schedule 4**.
- 11.3 The Company will ensure:
- 11.3.1 prompt unloading of the Timber delivered; and
 - 11.3.2 all unloading operations are performed in a safe manner in accordance with the *Forest Safety Code (2003)* and any other relevant code issued by NSW WorkCover or other relevant agency which replaces or exercises the functions carried out by NSW WorkCover.
- 11.4 State Forests must ensure all truck drivers delivering Timber, and who are required by arrangement with the Company to unload trucks at the Delivery Sites, are accredited to operate log unloading equipment, and attend the Company's site induction training. The Company must provide the site induction training free of cost and may refuse entry to any truck driver who has not attended such training.

12. SPECIFICATIONS

- 12.1 The Company will accept any timber which, when delivered to the Delivery Sites, conforms to the Specifications.
- 12.2 Timber will be deemed to conform to the Specifications once the delivery docket has been signed by the Company and the Company does not object under **clause 12.3** to its failure to meet the Specifications.
- 12.3 If the Company disputes that timber delivered by State Forests conforms to the Specifications, the Company will advise State Forests of the dispute within seven Business Days of delivery of the timber and set the timber aside for inspection and adjudication by a suitably qualified State Forests officer.
- 12.4 State Forests must arrange for the inspection and adjudication of disputed timber within five Business Days after receipt of advice referred to in **clause 12.3**.
- 12.5 Subject to **clause 12.7** the Company must accept the determination of the suitably qualified State Forests officer regarding disputed timber as final and binding.
- 12.6 If a State Forests officer determines that disputed timber fails to meet the Specifications:
- 12.6.1 State Forests may arrange for the timber to be reserviced so that it complies with the Specifications; or
 - 12.6.2 the Company may, at its sole discretion, elect to accept delivery of the timber on terms and conditions (including price) to be agreed between the parties and in such a case the disputed timber will be deemed to be Timber made available to the Company as part of the Annual Supply; or
 - 12.6.3 if, for any reason, the Company does not elect to accept delivery of the timber, State Forests must remove the timber from the Delivery Site within 7 days at State Forests' expense.
- 12.7 If the Company disputes a determination by a suitably qualified State Forests officer, the Company may appeal to State Forests General Manager Marketing within two Business Days of having been notified of the determination. If the Company disputes the determination of State Forests General Manager Marketing or his nominee regarding disputed timber the matter may be treated as a dispute under **Clause 29**.

13. TITLE AND RISK

- 13.1 Ownership of the Timber comprising the Annual Supply will pass to the Company on payment for the Timber by the Company to State Forests.
- 13.2 The risks of ownership of the Timber forming part of the Annual Supply will pass to the Company once the Timber has been delivered to a Delivery Site and the delivery docket has been signed.

14. DELIVERED PRICES

- 14.1 The prices payable by the Company for Timber delivered to it under this Agreement will be the Delivered Prices.
- 14.2 The Delivered Prices for the Year commencing 1 January 2004 are as specified in **Schedule 4**.
- 14.3 The parties acknowledge that the Delivered Prices are based on an assumption that the Base Supply shall be sourced from State Forests regions in the approximate proportions set out in the Base Supply Distribution.
- 14.4 The Delivered Prices will be varied from time to time in accordance with **clause 15**.

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15. DELIVERED PRICE REVIEW

- 15.1 The Delivered Prices for each Year from 1 January 2005 shall be the Delivered Prices for the previous Year varied by the percentage determined by State Forests by applying the Delivered Price Review Mechanism as specified in **Schedule 5**.
- 15.2 On 31 March each Year State Forests must apply the Delivered Price Review Mechanism to determine the Delivered Prices for the Year.
- 15.3 State Forests must provide the Company with details of its determination of the Delivered Prices. The Delivered Prices determined for a Year in accordance with **clause 15.2** will apply retrospectively from the commencement of the Year..
- 15.4 If:
- 15.4.1 an exceptional change occurs in the Indicator Rate of an Indicator; or
 - 15.4.2 a factor which is not then included as an Indicator or a Cost Item becomes apparent, which may have a significant effect on the market value or delivered cost of Timber delivered to a Delivery Site;
 - 15.4.3 a factor which is included as an Indicator or a Cost Item ceases to have effect on the market value or delivered cost of Timber delivered to a Delivery Site; or
 - 15.4.4 the proportion of the Base Supply sourced from any individual State Forests region identified in the Base Supply Distribution, varies by more than 5% of the proportion identified in the Base Supply Distribution for that region;
- a party may request a review of the Delivered Price Review Mechanism and the parties must negotiate in good faith to reach agreement on whether to amend the Delivered Price Review Mechanism by adding, deleting or varying any Cost Item, Indicator, Indicator Rate, or Indicator Weighting and in default of agreement (and subject to **clause 15.5**) State Forests may:
- 15.4.5 determine whether any amendment is necessary;
 - 15.4.6 make such any amendment as it considers necessary; and
 - 15.4.7 implement its determination in relation to Delivered Prices to apply in the Year following the Year of the review.
- 15.5 Any agreement or determination under **clause 15.4** must meet the requirement that the Delivered Price Review Mechanism provides a fair and reasonable mechanism for calculating shifts in the market value and delivered cost of Timber delivered at the Delivery Sites.
- 15.6 If:
- 15.6.1 in a Year ("the relevant Year") the proportion of the Base Supply sourced from any individual State Forests Region identified in the Base Supply Distribution, varies by more than 5% of the proportion identified in the Base Supply Distribution for that Region; then
 - 15.6.2 a party may within 30 days of the end of the relevant Year (and in this respect time shall be of the essence) request a review of the Delivered Price Review Mechanism and the parties must negotiate in good faith to reach agreement on whether to amend the Delivered Price and in default of agreement (and subject to **clause 15.7**) State Forests may:
 - (a) determine whether any amendment is necessary;
 - (b) make such any amendment as it considers necessary; and
 - (c) implement its determination in relation to Delivered Prices to apply retrospectively to the commencement of the Year following the relevant Year.
- 15.7 Any agreement or determination under **clause 15.6** must meet the requirement that:
- 15.7.1 the change in the Delivered Price is consistent with the variation in the source of Timber from that anticipated by Base Supply Distribution; and
 - 15.7.2 the Delivered Price is fair reasonable and competitive.

- 15.8 Any money due to a party as a result the retrospective application of Delivered Prices under **clause 15.3 or clause 15.6** must be paid within one month of the claim for the adjustment being made.
- 15.9 If the Delivered Prices are amended under **clause 15.6** at the same time the Delivered Prices are amended the Base Supply Distribution shall also be amended to reflect the geographic (by State Forests Region) distribution of the source of the Base Supply during the relevant Year (as defined in **clause 15.6**).

16. INFORMATION

- 16.1 The Company must ensure throughout the Term (despite it not being the person which will receive the relevant information) that the person which receives the information maintains and keep all accounts and other written information relating to that person's sales relevant to the review of the Delivered Prices or the Delivered Price Review Mechanism under **clause 16** together with all documentation which may verify the accuracy of such information.
- 16.2 State Forests may request information from the Company relating to the sales relevant to the review of Delivered Prices or the Delivered Price Review Mechanism including any documentation verifying the accuracy of such information.
- 16.3 The Company must:
- 16.3.1 ensure it has a legal right to require the person referred to in **clause 16.1** to provide it with the information referred to in **clause 16.2**; and
 - 16.3.2 promptly provide the information and verifying documentation, on a confidential basis, to State Forests.
- 16.4 If requested by State Forests, the Company must provide to an independent auditor engaged by State Forests full access to all accounts and papers and full information and assistance necessary for the auditor to examine and verify any information which State Forests may request under **clause 16.2** or is provided by the Company under **clause 16.3**.
- 16.5 State Forests must advise the Company in writing of any variation to Delivered Prices or the Delivered Price Review Mechanism as soon as practicable after the variation is agreed or determined.

17. GOODS AND SERVICES TAX

- 17.1 Delivered Price and any other consideration for supplies specified in this Agreement do not, subject to the operation of this clause, include any amount in respect of GST unless provided otherwise.
- 17.2 The GST may be imposed on the Delivered Price for Timber delivered under this Agreement.
- 17.3 If GST is or will be imposed on a supply made under this Agreement, the supplier may:
- 17.3.1 increase the consideration otherwise provided for that supply under this Agreement by the amount of that GST; or
 - 17.3.2 otherwise recover from the recipient the amount of that GST.
- 17.4 The supplier must ensure that any invoice issued under this agreement in respect of a taxable supply is a Tax Invoice or Adjustment Note as appropriate or, if no invoice is to be otherwise issued under this Agreement, must issue a Tax Invoice or Adjustment Note as appropriate within 7 days of GST being imposed on a taxable supply made under this Agreement. Notwithstanding any other provision of this Agreement the payment of any amount by the recipient in respect of a taxable supply is subject to the issuing of the relevant Tax Invoice or Adjustment Note to the recipient.

- 17.5 Costs required to be reimbursed or indemnified under this Agreement must exclude any amount in respect of GST included in the costs for which an entitlement arises to claim an input tax credit provided that the reimbursement or indemnification does not amount to consideration for a taxable supply.
- 17.6 If the consideration for a supply under this Agreement is calculated by reference to the consideration or value of other supplies, in performing that calculation, the consideration or value for those other supplies excludes any amount in respect of GST payable on those supplies.
- 17.7 In the calculation of Delivered Prices by reference to movements in any index, such as the Consumer Price Index:
- 17.7.1 any increase in the index attributable to the introduction or increase in the rate of GST published by the Commonwealth Statistician or similar government body is to be excluded from the index for the purposes of adjusting the consideration;
 - 17.7.2 if the Commonwealth Statistician or similar government body does not publish the increase in the index attributable to the introduction or increase in the rate of GST, State Forests or the Company may request the president for the time being of the Institute of Chartered Accountants in Australia or an officer of another Australian professional association agreed by State Forests and the Company to appoint a person to decide the increase in the index attributable to the introduction or increase in the rate of GST for the purposes of this clause;
 - 17.7.3 the person appointed will act as an expert and not an arbitrator;
 - 17.7.4 the expert's decision is final and binding on the parties; and
 - 17.7.5 the State Forests and the Company must each pay one half of the expert's fee (including expenses) in relation to the decision.
- 17.8 In this clause:
- 17.8.1 **Adjustment Note** includes any document or record treated by the Commissioner of Taxation as an adjustment note or as enabling the claiming of an input tax credit for which an entitlement otherwise arises;
 - 17.8.2 **GST** includes any replacement or subsequent similar tax;
 - 17.8.3 **GST Act** means A New Tax System (Goods and Services Tax) Act 1999 (Cth);
 - 17.8.4 **New Tax System changes** has the same meaning as in the Trade Practices Act 1974 (Cth); and
 - 17.8.5 **Tax Invoice** includes any document or record treated by the Commissioner of Taxation as a tax invoice or as enabling the claiming of an input tax credit for which an entitlement otherwise arises.
 - 17.8.6 Terms defined in the GST Act have the same meaning in this clause unless provided otherwise.

18. PAYMENT

- 18.1 State Forests will issue monthly tax invoices for the Timber delivered to the Company.
- 18.2 The Company must pay any invoice issued to it prior to the expiration of 14 days after the date of its issue, or the expiration of the calendar month within which it was issued, whichever last occurs. The Company is liable to pay an invoice issued to it and any interest accrued on that invoice as a debt due and payable to State Forests.
- 18.3 If the Company fails to pay an invoice on or before the due date for payment of that invoice:
- 18.3.1 State Forests may give written notice to the Company of its intention to suspend the Company's right to take Timber if payment is not made within 7 days after the date of the notice; and
 - 18.3.2 if the invoice is not paid within the 7 day period State Forests may suspend the Company's right to obtain Timber under this Agreement until payment is made.

- 18.4 If the Company does not accept delivery of Timber harvested in accordance with the Monthly Delivery Schedule or agreed changes to the Monthly Delivery Schedule, State Forests may estimate the quantity of Timber that has not been accepted by the Company and issue an invoice to the Company as if that estimated quantity had been accepted by the Company. Any such invoice will be deemed to be an invoice for Timber delivered to the Company and the provisions of **clauses 18.2 and 18.3** will apply to it. The invoice will be accepted by the Company as pre-estimated and liquidated damages and not a penalty.
- 18.5 Where the Company pays an invoice issued under **clause 18.4** and the relevant Timber is subsequently accepted by the Company, State Forests will adjust its invoices to take into account the previous payment of the invoice issued under **clause 18.4**.

19. MEASUREMENT

- 19.1 The Timber delivered by State Forests to the Delivery Sites must be measured as provided under the Code of Procedure. The Code of Procedure may be amended by State Forests from time to time as may be considered necessary by State Forests, acting reasonably. State Forests will consult with and take into account any comments of the Company before any amendments are effected or implemented.

20. COMPANY'S OBLIGATIONS

- 20.2 The Company must comply with:
- 20.2.1 the provisions of the Act; and
 - 20.2.3 the Code of Procedure.

21. STATE FORESTS OBLIGATIONS

- 21.1 State Forests will use its best endeavours to supply Timber substantially in accordance with the Monthly Delivery Schedules.

22. INDEMNITY AND INSURANCE

- 22.1 The Company indemnifies State Forests against all actions, proceedings, claims, demands and expenses by any person in respect of or arising out of the negligent performance by the Company of its obligations under this Agreement.
- 22.2 State Forests indemnifies the Company against all actions, proceedings, claims, demands and expenses by any person in respect of or arising out of the negligent performance by State Forests of its obligations under this Agreement.
- 22.3 The Company will take out and maintain Public Liability Insurance with a reputable insurance company approved by State Forests and under a policy approved by State Forests in an amount not less than \$10 million for each and every occurrence and not limited in the aggregate for any one period of claim.
- 22.4 State Forests will maintain Public Liability Insurance to cover public liability under this Agreement.

23. SALE OF TIMBER TO OTHER PERSONS

- 23.1 State Forests reserves the right to:
- 23.1.1 supply timber, products and forest materials from the Area of Supply;
 - 23.1.2 issue licences to obtain timber, products or forest materials within the Area of Supply;

- 23.1.3 sell part or all of the Annual Supply not taken or proposed to not be taken by the Company in any Year; or,
- 23.1.4 sell any Timber which does not form part of the Annual Supply; to any other person.

24. SECURITY

- 24.1 State Forests may request the Company to provide and maintain security ('security') for the performance of its obligations under this Agreement in a sum determined by State Forests from time to time. Each Year of the Term the amount of the security determined by State Forests may not exceed the maximum amount which would be payable by the Company for Timber delivered during any eight (8) week period assuming that Timber was delivered in accordance with the Annual Delivery Plan for that Year ('secured amount').
- 24.2 The security (including additional security referred to in **clause 24.4**) must:
 - 24.2.1 be a bank guarantee or other form approved by State Forests; and
 - 24.2.2 be lodged within fourteen (14) days of written request by State Forests.
- 24.3 State Forests may, after advising the Company, draw upon the secured amount to cover any loss or damage caused by the Company's breach of its obligations under this Agreement.
- 24.4 If State Forests draws on the secured amount under this Agreement but does not terminate this Agreement as a result of the breach or if State Forests gives written notice of an increase in the secured amount, then the Company must provide additional security on State Forests written request so that the secured amount is maintained at the level determined under **clause 24.1**.
- 24.5 State Forests may suspend the Company's rights to obtain Timber under this Agreement if the Company fails to lodge the security when requested to do so.
- 24.6 State Forests must release the security to the Company after the expiration of 6 months of the date of termination or assignment of this Agreement (other than by Change in Control) of this Agreement if no money is due to State Forests.

25. FORCE MAJEURE

- 25.1 If the Company is prevented from taking Timber by Force Majeure and:
 - 25.1.1 the Force Majeure was not caused by any unlawful act or omission on the part of the Company or any employee or agent of the Company;
 - 25.1.2 the Company had taken all reasonable or practicable precautions to prevent the Force Majeure; and
 - 25.1.3 the Company has made all reasonable efforts to contain the effect of the Force Majeure,

then the Company may apply to State Forests for suspension or modification of its obligations under this Agreement to the extent that its obligations have been affected by the Force Majeure.

- 25.2 Where the Company makes application under **clause 25.1**, State Forests will negotiate with the Company in good faith to review the Annual Supply taking into account the effect of the Force Majeure event on the productive capacity of the Company, but subject to the obligation on the Company to do all things necessary or practicable to mitigate the effect of the Force Majeure on the functions and obligations of State Forests under this Agreement and the Act.
- 25.3 Where the Company applies for suspension or modification of its obligations under **clause 25.1** and the relief granted results in the Timber harvested being less than 50

percent of the Annual Supply in any two consecutive Years, State Forests may reduce the Annual Supply to an amount equal to the average of the Timber taken by the Company over those two Years. If no Timber are taken over those two Years, the Agreement may be terminated by State Forests or the Company by notice in writing to the other party.

- 25.4 If State Forests is prevented from performing all or any of its obligations under this Agreement by reason of the Force Majeure:
- 25.4.1 the Company will have no claim against State Forests or the State of New South Wales for non-fulfilment of State Forests' obligations under this Agreement, to the extent that the non-fulfilment is due to the event of Force Majeure;
- 25.4.2 State Forests will use its best endeavours to assist the Company to locate an alternative supply of Timber from Crown-timber land, until State Forests is able to resume supply of the Annual Supply. To resolve any doubt State Forests will have no obligations to deliver such Timber and State Forests will not be liable to meet any costs associated with the Company obtaining an alternative supply; and
- 25.4.3 if the Force Majeure prevents State Forests from making Timber available at a rate greater than that necessary to enable it to supply more than fifty (50) percent of the Base Supply on a Yearly basis and if State Forests is unable to resume the performance of its obligations within a period of 6 months from the date of the occurrence of the Force Majeure or date when the occurrence of the Force Majeure first became apparent (the 'relevant date') either party may terminate the Agreement by notice. The right to give notice under this **clause 25.4.3** must be exercised within a period of 9 months from the relevant date and in this regard time will be of the essence.
- 25.5 A party affected by an event of Force Majeure must give initial notice of the existence or occurrence of the event of Force Majeure as soon as is practicable to do so and in any case it must provide a more detailed notice within thirty (30) days of the event of Force Majeure being apparent which provides clear details of the event or occurrence claimed as Force Majeure and setting out particulars of the likely effects of the event or occurrence in question.
- 25.6 If the Company fails to comply with the notice requirements under **clause 25.5**, State Forests will be entitled to take the consequences of this failure into account in assessing the effect and mitigation of the Force Majeure under **clause 25.2**.
- 25.7 If State Forests fails to comply with the notice requirements under **clause 25.5** the Company may require State Forests to supply details of any alternate supplies of Timber which could be made available to the Company to mitigate the consequence of late notification.

26. PRIORITY OF SUPPLY

- 26.1 If an event of Force Majeure results in a reduction in the yield of Timber within the Area of Supply then State Forests must allocate the available Timber to the Company and other persons, with contracts with State Forests for the supply of Timber from the Area of Supply, in proportion to their respective entitlements under their contracts.
- 26.2 The Company will have no claim against State Forests for non-compliance with its obligations to make the Annual Supply available if State Forests, as far as is reasonably practicable, supplies Timber in substantial compliance with **clause 26.1**.

27. LIMITATION OF LIABILITY

- 27.1 Where State Forests is in breach of this Agreement by reason of any failure to supply or deliver Timber, any claim for loss suffered by the Company will be limited to the lesser of;

- 27.1.1 the loss, damage or expense which would be incurred by the Company as a direct result of obtaining the Timber (which State Forests failed to make available, supply or deliver) from the most economic alternative source; or
- 27.1.2 the Company's loss of earnings after deducting operating costs but before interest, tax, depreciation, and amortisation;
but shall not otherwise include consequential loss.
- 27.2 Except where this Agreement otherwise provides, if the Company is in breach of this Agreement by reason of any failure to take Timber, any claim for loss suffered by State Forests will be limited to any loss, damage, or expense incurred by State Forests as a direct result of the failure of the Company to take the Timber under this Agreement.

28. TERMINATION OF AGREEMENT

- 28.1 State Forests may terminate this Agreement if the Company:
- 28.1.1 suffers an Insolvency Event; or
- 28.1.2 commits a material breach of this Agreement and the default is not remedied by the Company to the satisfaction of State Forests within a period of thirty (30) days after notice of the breach has been served on the Company.
Material breaches include without limitation:
- (i) failing to take the quantities of Timber prescribed in **clause 6.7**;
 - (ii) failing to accept Timber in breach of **clauses 11.1**;
 - (iii) failing to make payments in breach of **clause 18.2**;
 - (iv) failing to provide security or to adjust or vary the secured amount in breach of **clause 24**; and
 - (v) purporting to assign the whole or any part of this Agreement without the consent of State Forests in breach of **clause 34**.
- 28.2 If State Forests commits a material breach of this Agreement and the default is not remedied to the satisfaction of the Company within a reasonable period after notice to remedy the breach has been served on State Forests, then the Company may terminate this Agreement. A material breach includes without limitation failing to supply the Annual Supply in breach of **clause 2.2.1**.
- 28.3 The party terminating this Agreement arising from the default of the other party may claim damages for all loss arising from the default unless the claim for damages is excluded under this Agreement.

29. DISPUTES

The following procedures will apply to disputes under this Agreement:

- 29.1 The party claiming a dispute must first seek resolution by negotiation and, failing that, the dispute must be referred to mediation by the Australian Commercial Disputes Centre ('ACDC').
- 29.2 In the event that the dispute has not been resolved within twenty eight (28) days after the appointment of a mediator then, unless otherwise agreed in writing between the parties, the dispute must be submitted to arbitration, administered by ACDC.
- 29.3 The arbitrator will be agreed between the parties or, failing Agreement, shall be appointed by the Secretary-General of the ACDC or similar body. The arbitrator must not be the same person as the mediator.
- 29.4 Any mediation or arbitration proceedings must be held in Sydney. Any arbitration must be undertaken in accordance with and subject to the Institute of Arbitrators Rules for the conduct of Commercial Arbitration.

- 29.5 The Arbitrator or some person appointed on the Arbitrator's behalf may investigate the Company's and State Forests' affairs and accounts so far as may be necessary to assist the Arbitrator to determine any matter referred for arbitration. The Company and State Forests must give the Arbitrator full access to all accounts and papers necessary for that purpose and must afford the Arbitrator full information and assistance.
- 29.6 The provisions of this **clause 29** will not apply to **clause 24**.
- 29.7 In so far as the provisions of this **clause 29** apply to **clause 15** the issue for consideration by any mediation or arbitration is to be limited to whether the Delivered Prices or the Delivered Price Review Mechanism in dispute (the "disputed item"), was a reasonable one in consideration of the factors set out in **clause 15** to be taken into account in determining the disputed item. To avoid any doubt any such arbitration may not determine the Delivered Prices or the Delivered Price Review Mechanism which is to apply.
- 29.8 If an arbitration regarding a disputed item determines the disputed item was unreasonable the disputed item will be void ab initio and State Forests must:
- 29.8.1 promptly redetermine the disputed Delivered Prices or the Delivered Price Review Mechanism which will then apply from the first date the dispute item was originally intended to apply;
- 29.8.2 refund to the Company any over payment made under the disputed item.

30. EXTENSION

- 30.1 Subject to the parties reaching agreement on the matters referred to in **clause 30.2** the Company is entitled, by written notice to State Forests, to two (2) extensions of the Term each for a period of no shorter than one (1) year and no longer than four (4) years, with the total period of the extensions granted under this clause not exceeding a period of four (4) years, provided that;
- a) such written notice:
- (i) in relation to the first extension, is given by 30 September 2007;
- (ii) in relation to the second extension, is given no less three (3) months before the expiry of the first extension;
- b) the Company is not in material breach of the Agreement at the time; and
- c) such written notice identifies the period that the Company wishes the Term be extended.
- 30.2 If the Company seeks an extension under **Clause 30.1**, the parties will confer and negotiate in good faith to reach agreement on:
- 30.2.1 the quantity of Timber which would be made available under an extended agreement; and
- 30.2.2 the Delivered Prices (including the mechanism to vary the Delivered Price) under an extended agreement.
- 30.3 Subject to the parties reaching agreement on the matters referred to in **clause 30.2** and any variations necessary to give effect to the parties agreement on those matters, this Agreement will be so extended upon the same terms and conditions as set out herein.

31. ADDITIONAL RESOURCE

31. State Forests must notify the Company of any Additional Resource and ensure the Company has an opportunity to participate on an equitable basis in the process determined by State Forests to allocate the Additional Resource.

32. WAIVER

- 32.1 Agreement by State Forests to an Annual Delivery Plan or Monthly Delivery Schedule or amendment thereto which provides for the Company to take less than the Annual Supply

in any Year will not constitute a waiver of any obligation imposed, or right given, by this Agreement.

- 32.2 A party does not waive a right or power simply because it fails to exercise or delays exercising that right or power. A single exercise of a right or power does not prevent exercising it again or exercising any other right or power. A right or power may only be waived in writing signed by the party to be bound by the waiver.

33. VARIATION

- 33.1 This Agreement contains the total understanding of the parties and the State of New South Wales in relation to the matters referred to herein.
- 33.2 None of the provisions of this Agreement may be varied, waived, discharged or released either at law or in equity, unless by the express consent of the parties and the State of New South Wales in writing.

34. ASSIGNMENT

- 34.1 The Company may not without the prior written consent of State Forests assign its rights and responsibilities under this Agreement to any person provided that State Forests' consent will not be unreasonably withheld. Any Change in Control of the Company will be deemed to be an assignment of the Company's rights and entitlements under this Agreement.
- 34.2 Subject to **clause 34.4**, State Forests may not refuse its consent if the Company proposes to assign its rights and responsibilities to a Related Body Corporate.
- 34.3 The consent given by State Forests may be subject to the assignee executing all Agreements and other documents which State Forests reasonably requires.
- 34.4 All money due to State Forests under this Agreement must be paid before any assignment of it by the Company.

35. INTEREST

- 35.1 In the event that the Company fails to pay any money due to State Forests when required to do so by this Agreement, interest will accrue on all unpaid money from the date of default until payment in full at the rate of interest per annum for the time being payable under Schedule J of the Supreme Court Rules (NSW).

36. NOTICE

- 36.1 Any notice required to be served under this Agreement:

36.1.1 must be in writing;

36.1.2 must, subject to **Clause 36.3**, be served;

- (a) in the case of the Company:
Attention: Tom Bertinshaw
General Manager
SEPL
89 St Hilliers Road
AUBURN NSW 2144

(b) in the case of State Forests:
Attention: General Manager, Marketing
State Forests of NSW
Locked Bag 23
Building 2
423 Pennant Hills Road
PENNANT HILLS NSW 2120
Phone (02) 9980 4100
Fax (02) 9484 1310

- 36.1.3 must be signed by the party serving the notice or (on its behalf) by the solicitor for, or by any attorney, director, secretary, or authorised agent of, that party;
- 36.1.4 must be delivered or posted by prepaid post to the address, or sent by fax to the number, of the addressee, in accordance with **clauses 36.1.2 and 36.3**; and
- 36.1.5 will be deemed to be received by the addressee:
- (a) (in the case of prepaid post) on the third business day after the date of posting to an address within Australia, and on the fifth business day after the date of posting to an address outside Australia;
 - (b) (in the case of fax) at the local time (in the place of receipt of that fax) which then equates to the time at which that fax is sent as shown on the transmission report which is produced by the machine from which that fax is sent and which confirms transmission of that fax in its entirety, unless that local time is a non business day, or is after 5.00 pm on a business day, when that notice will be deemed to be received at 9.00 am on the next business day; and
 - (c) (in the case of delivery by hand) on delivery, unless that delivery is made on a non business day, or after 5.00 pm on a business day, when that notice will be deemed to be received at 9.00 am on the next business day.
- 36.2 In this **Clause 36, 'business day'** means any day other than a Saturday, Sunday or public holiday in the place of receipt of the relevant notice.
- 36.3 The parties may change the address for service of notice from time to time by notice in writing to the other party.

37. GOVERNING LAW

- 37.1 This Agreement is governed by the laws of New South Wales and the parties agree to the jurisdiction of the Courts of New South Wales.

38. SEVERABILITY

- 38.1 If any provisions of this Agreement are held to be invalid, illegal, or unenforceable by a Court or other tribunal of competent jurisdiction, the validity, legality, and enforceability of the remaining provisions will not in any way be affected or impaired thereby.

39. CONFIDENTIALITY

- 39.1 No party will disclose the contents or terms of this Agreement or any information or documents received by it in connection with the negotiation of this Agreement or pursuant

to the provisions of this Agreement without the prior written consent of the other parties, except to the extent that:

- 39.1.1 the information is available to the public generally;
- 39.1.2 that party is required to make the disclosure by law or to make any filing, recording or registration required by law;
- 39.1.3 the disclosure is necessary or advisable for the purpose of obtaining any consent, authorisation, approval or licence from any public body or authority;
- 39.1.4 it is necessary that the disclosure be made to any taxation or fiscal authority;
- 39.1.5 the disclosure is made on a confidential basis to the professional advisers of that party (including any industry association) for the purpose of obtaining advice in relation to this Agreement or the enforcement of this Agreement or otherwise for the purpose of consulting those professional advisers;
- 39.1.6 any financier to the Company;
- 39.1.7 any prospective purchaser of the Company or any of either assets or undertakings; or
- 39.1.8 the disclosure is required or desirable to be made in pursuance of any procedure for discovery of documents and any proceedings before any court, tribunal or regulatory body.

40. COSTS

- 40.1 The Company will bear all the expenses and costs of, and incidental to, the stamping of this Agreement.
- 40.2 Other than as provided in **clause 40.1** each party will bear its own costs of, and incidental to, the preparation, negotiation and execution of this Agreement.

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SCHEDULE 1
SPECIFICATIONS

PULPWOOD - EXPORT

Species	All hardwood species except Red Bloodwood, White mahogany, Red Mahogany, Turpentine, Tallowwood, Ironbark, Grey Gum, or as other wise advised		
Minimum Length / Diameter	Richards	Minimum Length Diameter Range	24 dm 10cm - 30cm
	Newells Creek	Minimum Length Diameter Range	24 dm 10-37.5cm
	Tea Gardens	Minimum Length Diameter Range	24 dm 10 – 45 cm
	B & S Timbers	Minimum Length Diameter Range	24 dm 25 – 65 cm
	Newcastle Woodchipping	Minimum Length Diameter Range	24 dm 10 – 40 cm
Straightness	Richards	<ul style="list-style-type: none"> • Logs must be capable of passing through an opening of 30cm without jamming • Split billets need to meet the same diameter constraints as round billets. 	
	Newells Creek	<ul style="list-style-type: none"> • Logs must be capable of passing through an opening of 375mm without jamming • Split billets only allowed when notified. Split billets need to meet the same diameter constraints as round billets. 	
	Tea Gardens	<ul style="list-style-type: none"> • Logs must be capable of passing through an opening of 45cm without jamming • Split billets only allowed when notified. Split billets need to meet the same diameter constraints as round billets. 	
	B & S Timbers	<ul style="list-style-type: none"> • Logs must be capable of passing through an opening of 65cm without jamming • Split billets only allowed when notified. Split billets need to meet the same diameter constraints as round billets. 	
	Newcastle Woodchipping	<ul style="list-style-type: none"> • Logs must be capable of passing through an opening of 40cm without jamming • Split billets only allowed when notified. Split billets need to meet the same diameter constraints as round billets. 	
Moisture content	All logs to be delivered within one month of being felled or of log presentation on the dump.		
Bark	All logs must be fully debarked		
Foreign Material	All charcoal, metal, stone, bitumen and plastic must be fully removed		
Defect	All logs must be solid with no pipe, carrot heart, doze, tiger cat or wet fungal rot.		

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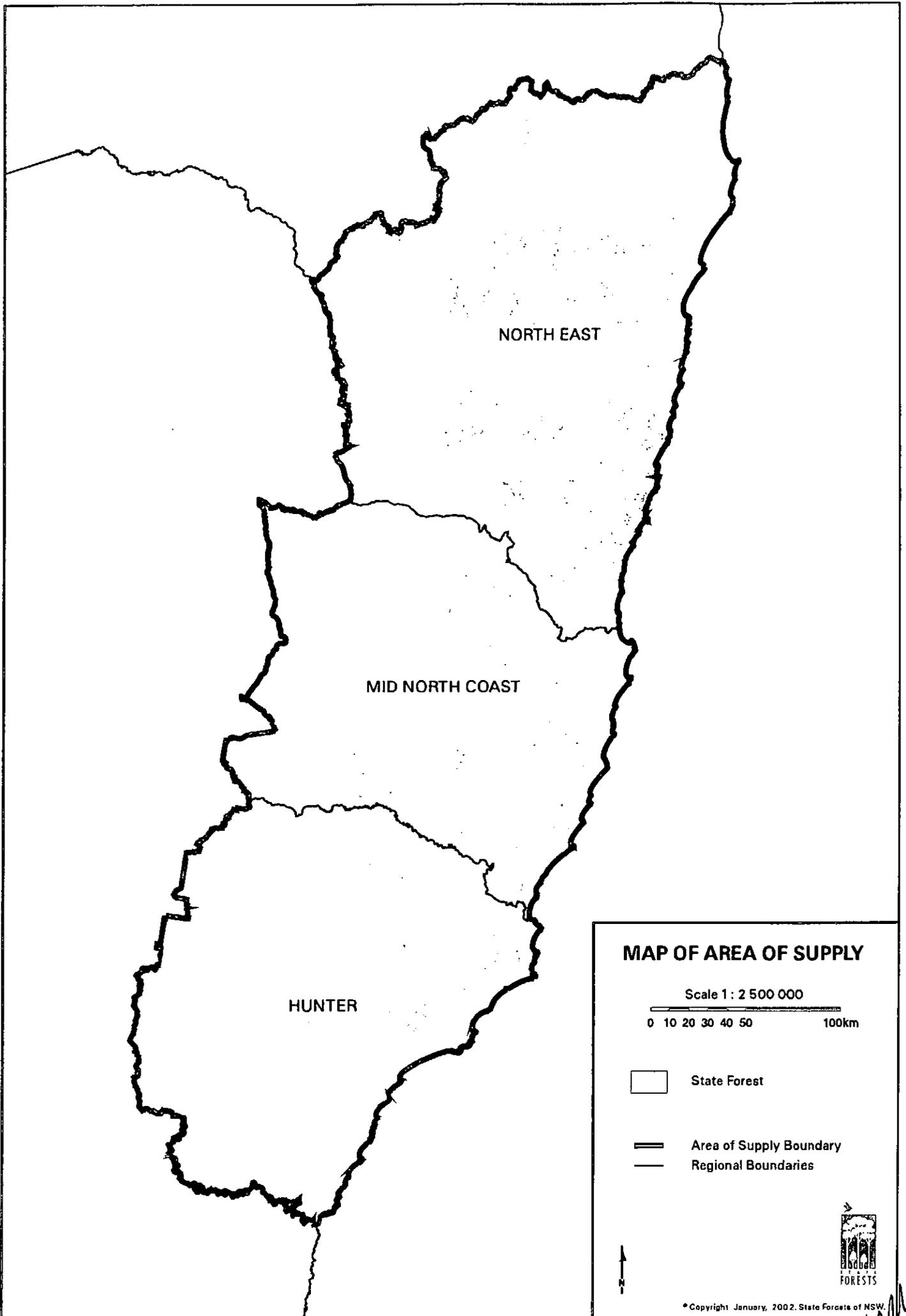
SCHEDULE 2

MAP OF AREA OF SUPPLY



nthcstzone.pdf

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NORTH EAST

MID NORTH COAST

HUNTER

MAP OF AREA OF SUPPLY

Scale 1 : 2 500 000

0 10 20 30 40 50 100km

 State Forest

 Area of Supply Boundary
 Regional Boundaries



* Copyright January, 2002, State Forests of NSW

SCHEDULE 3

BASE SUPPLY

150,000 Green Metric Tonnes per Year

BASE SUPPLY DISTRIBUTION

State Forests Region	Proportion of Base Supply
North East Region	20%
Mid North Coast Region	50%
Hunter Region	30%

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SCHEDULE 4

DELIVERY SITES, HOURS AND YEAR 2004 DELIVERED PRICES

Delivery Site	Delivery Address	Delivery Hours	1 May 2004 to 31 December 2005 Delivered Prices (\$/GMT) (State Forests Region)	1 Jan 2004 to 30 April 2004 Delivered Price (\$/GMT) (State Forests Region)	Indicative Proportion of Supply
Boral – Tea Gardens	Pindimar Rd, Pindimar 2324	6.00 am to 5.00 pm Monday to Friday and 8.00 am to 4.00 pm Saturday	\$46.23 (Hunter, Mid North Coast and North East)	\$45.00 (Hunter, Mid North Coast and North East)	50%
B & S Timber	Masonite Rd, Raymond Terrace 2324	6.00 am to 4.00 pm Monday to Friday Saturday if required.	\$45.72 (Hunter) \$47.77 (Mid North Coast and North East)	\$44.50 (Hunter) \$46.50 (Mid North Coast and North East)	50%
Newcastle Woodchipping	5 Sandpiper Cl, Kooragang Is 2304	7.00 am to 4.00 pm Monday to Friday	\$47.98 (Hunter) \$50.34 (Mid North Coast and North East)	\$46.70 (Hunter) \$49.00 (Mid North Coast and North East)	
Newell's Creek Sawmilling Company	Newell's Creek Marwell Road Bulahdelah NSW 2423	6.00am to 5.00pm Monday to Thursday 6.00am to 3.00pm Friday	\$43.82 Hunter (Bulahdelah and Gloucester East Price Zones) \$44.83 (Gloucester Plantations) \$44.83 (Mid North Coast)	\$43.50 Hunter (Bulahdelah and Gloucester East Price Zones) \$44.50 (Gloucester Plantations) \$44.50 (Mid North Coast)	
Richards (Grafton)	Orchard Road Mountain View NSW	Monday to Thursday 6.00 am to 3.20pm Friday 6.00am to 2.20 pm	\$33.39 (North East)	\$32.50	
OTHER	AS AGREED FROM TIME TO TIME				

Please note for the purposes of Clause 15 the prices from 1 May 2004 to 31 December 2005 Delivered Prices (\$/GMT) (State Forests Region) will apply.

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SCHEDULE 5

DELIVERED PRICE REVIEW MECHANISM

Part 1: Definitions and interpretation

In this Schedule unless the context indicates to the contrary:

Base Indicator Rate for a review means the Indicator Rate which was the Current Indicator Rate for the previous review except:

- (a) in the case of the first review where it means the value or status of the Indicator set out in column 3 of Part 3; and
- (b) in the case of the Pulpwood Price Index being based on the CPI it means the CPI last published prior to the last review before the review being conducted;

CPI means the Consumer Price Index (Sydney All Groups);

Cost Item means a factor relevant to the market value of Timber delivered at the Delivery Sites more particularly being any item set out in column 1 of Part 3;

- **Current Indicator Rate** means the indicator rate at the time a review of the Delivered Price is being conducted except in relation to Cost Item 1 where it means:
 - (a) if the Pulpwood Price Index is based on weighted average FOB prices:- the Pulpwood Price Index for the Year in which the review is then being conducted; and
 - (b) if the Pulpwood Price Index is based on the CPI:- the CPI last published prior to the review being conducted;

Indicator means an Indicator of a Cost Item more particularly being any Indicator set out in column 2 of Part 3;

Indicator Rate means the value or status of an Indicator at a point in time;

Indicator Weighting means the weighting given to a Indicator for the purpose of calculating the weighted movement across all Indicators during a review more particularly being the weighting set out in column 4 of Part 3;

Pulpwood Price Index for a Year means the weighted average FOB woodchip settlement price (\$/BDMT) that will be received for hardwood woodchip, derived from the Timber supplied during a Year, and exported during the Year provided that if that information is not available then Pulpwood Price Index means the CPI;

A reference to Part 3 means a reference to Part 3 of this Schedule as amended from time to time in accordance with this Agreement.

Part 2 : Methodology

The following describes the method of varying the Delivered Prices:

1. Ascertain the level of each Indicator in column 2 of Part 2, expressed in dollars and cents, percentage or as an index (as the case may be) current at the time of the review (the Current Indicator Rate). The Current Indicator Rate will be the Base Indicator Rate for the next review.
2. Ascertain the movement in each Indicator during the relevant review period by establishing the percentage increase (or decrease) in the Indicator Rate (by comparing the Current Indicator Rate (see clause 1) to the Base Indicator Rate) and applying any weighting specified in column 2 to that percentage change. An example of the methodology is shown in the example below:
 - (a) assume movement in the Pulpwood Price Indicator Rate is from \$150 (Base Indicator Rate) to \$156 (Current Indicator Rate);

- (b) Pulpwood Price Indicator Rate change is therefore + 4%;
- (c) weighting for Pulpwood Price is 100% (from column 2 of Part 3);
- (d) 100% of +4% is +4.0%.

Therefore +4.0% is the movement in the Pulpwood Price Indicator.*

3. Calculate the weighted movement across all Indicators by applying the methodology below:
 - (a) multiply the movement in each Indicator (see clause 2) by the weighting in column 4 of Part 3 (eg the + 4.0% for Pulpwood Price from clause 2 above is multiplied by the Indicator Weighting for Pulpwood Price, eg 20%, with the product being .80%);
 - (b) the sum of the products of each calculation referred to in clause 3(a) is the weighted movement across all Indicators.

5. The new Delivered Prices determined under this review mechanism are calculated by applying the weighted movement across all Indicators (from clause 4 above) to the current Delivered Prices as per the methodology in the example below:
 - (a) assume the weighted movement across all Indicators is +2.5%, and the existing Delivered Price is \$50.00;
 - (b) the new Delivered Price is $\$50.00 \times 1.025$ which equals \$51.25.

6. For the purposes of the next Delivered Price review ascertain new column 4 Part 3 Indicator Weighting for each Indicator by multiplying the then current column 4 Part 3 Indicator Weighting for each Indicator by the period movement in the relevant Indicator (see clause 2 above) and then dividing the result by the weighted movement across all Indicators (see clause 3 above). This will produce a new table of Indicator Weightings which sum to 100 percent. For example:
 - (a) assume Pulpwood Price movement (see clause 2 above) is +4.0%, the weighted movement across all cost items is +2%, and the Indicator Weighting for Pulpwood Price (from column 4 of Part 3) is 20%;
 - (b) then the new Indicator Weighting for Pulpwood Price is calculated by the formula;
 - (c) $20\% \times 1.04 / 1.02$ which equals 20.39%.

*Note:-If the Pulpwood Price Index is based on the CPI the relevant movement is the percentage movement from the Base Indicator Rate to the Current Indicator Rate in the CPI.

Part 3

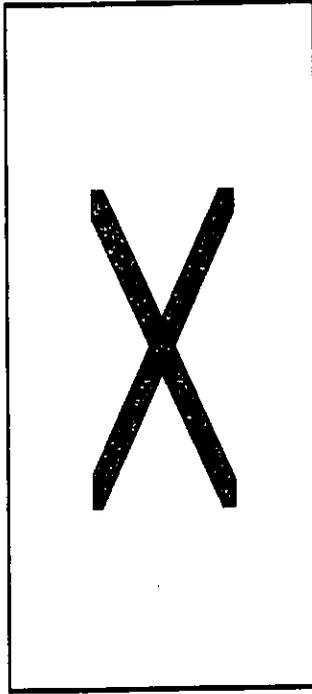
Indicators and Weighting's

Column 1	Column 2	Column 3	Column 4
Cost Item	Indicator	Indicator Rate	Weighting
Item 1: Pulpwood Price	100% of the movement in the Pulpwood Price Index		
Item 2: Movement in wages	100% of the movement in the ABS Full time adult ordinary time average weekly earnings in NSW		
Item 3: Movement in Fuel Price	100% of the weighted average movement in the Shell Wholesale List Price for diesel 500 in NSW for the previous Year Base Price* Plus Federal Excise Less 25% of the Diesel Fuel Rebate Less 75% of the On Road Grant Nett Price		
Item 4: Fixed Costs	No Adjustment		
Total			

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SCHEDULE 6
CODE OF PROCEDURE

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**CUSTOMER CODE OF
PROCEDURE
FOR
NATIVE FOREST MILL DOOR
SALES**

**NORTH EAST, MID NORTH COAST AND HUNTER
REGIONS**

APRIL 2002

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SECTION 1: MEASURING AND MARKING OF LOG PRODUCTS

1.1 Measuring of Log Products

State Forests must ensure that Log Products which are sold by volume are measured in accordance with Table 1.

Table 1 : Log Measurement

PRODUCT	LENGTH	DIAMETER
Quota, smalls, salvage, veneer	Actual length in decimetres rounded down to the next whole decimetre	Centre diameter underbark to the backward centimetre
Standard poles	Nominal length in decimetres rounded down to multiple of 15 decimetres	Groundline diameter underbark in millimetres
Piles and girders	Actual length in decimetres rounded down to the next whole decimetre	Toe diameter underbark in millimetres
Non-standard export poles	Nominal length in decimetres	Groundline diameter underbark in millimetres

Salvage logs to some customers and pulpwood are the only products sold by weight.

1.2 Marking of Log Products

1.2.2

Log Branding

State Forests must ensure that all log products except non-standard export poles, are branded in accordance with Table 2 below:

Table 2 : Log Branding

ITEM TO BE BRANDED	SALE BY VOLUME	SALE BY WEIGHT	
	All products	Salvage	Pulpwood
LENGTH	YES	NOT REQUIRED	NOT REQUIRED
DIAMETER	YES	NOT REQUIRED	NOT REQUIRED
SPECIES CODE	YES	YES Except for plantation salvage logs	NOT REQUIRED
COMPARTMENT NO	YES	YES Except for plantation salvage logs	NOT REQUIRED
LOG GRADERS ID	YES	YES Except for plantation salvage logs	YES if >30cms Butt diam NO if <30cms Buttdiam

Non-standard export poles require the length, species code and compartment number and the log graders ID branded on the pole.

Note that all logs, irrespective of quality and sales method (except for plantation salvage logs and pulpwood as indicated in Table 2) must be branded with the identification number of the log grader.

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1.2.2

Species Code

State Forests must ensure that the species code is branded on logs in accordance with Table 3.

Table 3 : Species Code

SPECIES CODE	DELIVERY DOCKET SYMBOL	SPECIES
1	IBK	Ironbark
2	TWD	Tallowwood
3	GBX	Grey Box
4	BG	Blue Gum
5	STS	Silvertop Stringybark
6	SG	Spotted Gum
7	NEB	New England Blackbutt
8	BBT	Blackbutt
9	RM	Red Mahogany
10	MM	Messmate
11	FAS	Fastigata
12	VIM	Viminalis
13	DHS	Diehard Stringybark
14	BBX	Brushbox
15	TRP	Turpentine
16	GG	Grey Gum
17	WM	White Mahogany
18	WS	White Stringybark
19	FG	Flooded Gum
20	RG	Forest Red Gum
21	RLG	Round Leaf Gum (<i>Enc. deanei</i>)
22	NOT TO BE USED	
23	BLW	Bloodwood
24	BLS	Blue Leaf Stringybark
25	PEP	Peppermint
26	QBX	Whitetopped box
27	RUM	Steel Box
28	SBA	Smoothbark Apple
29	SCG	Scribbly Gum
30	WG	White Gum (<i>Enc. dunnii</i>)
31	YBX	Yellow Box
32	GMM	Gympie Messmate
33	SM	Swamp Mahogany

1.2.3

Log Product Code

State Forests must ensure that all logs are marked on one end using paint or crayon with the appropriate log product code in accordance with Table 4.

Table 4 : Log Product Code

PRODUCT	CODE
Quota	O
Veneer	Ø
Face Veneer	F
Poles	P
Piles	I
Export Poles	E
Girders	G
Graded Smalls/Thinnings	T
Sleeper	S
Salvage	Z
Pulpwood	DOT IF >30CMS BUTT DIAM

In special cases, quota and small logs of individual species may be downgraded in some Price Zones where the net wood quality of the significant majority of logs is below that normally expected of that species.

Downgrading can only take place with State Forests prior approval and is Price Zone specific.

Downgraded logs are still graded as the same log product but to distinguish them, are marked with a "D". Downgraded logs should be marked with a "D" before the relevant product code, ie "DO" for downgraded quota and "DT" for downgraded small logs.

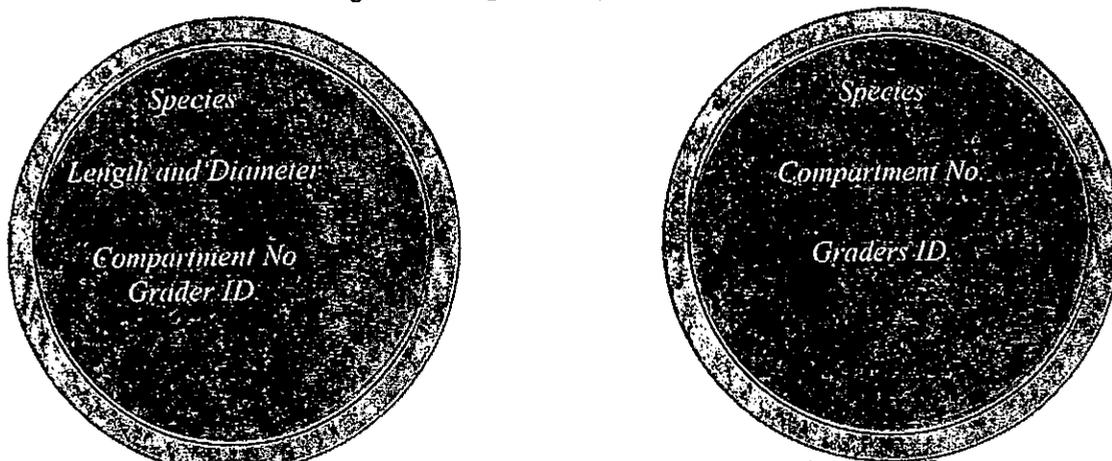
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1.2.4

Log Marking Format

State Forests must ensure that logs are branded on one end in the format shown in Figure 1 below.

Figure 1 - Log Marking Format



** Pulpwood >30cms butt diam only requires the product code and grader ID.

All plantation salvage logs and pulpwood < 30cm butt diam do not require branding. The product code for these logs must be painted on the end of the log.

Where a log is multigraded, ie two products in the one log, both sets of measurements including the product code are to be marked on the same end of the log.

Figure 2 - Log Marking Format – Multigraded Logs



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SECTION 2: DELIVERY DOCKETS

2.1 Issue of Delivery Dockets

Delivery Dockets will be supplied by State Forests at State Forests' cost. Dockets will be printed in quadruplicate and will be sequentially numbered.

2.2 Completion of Delivery Dockets

State Forests must ensure that, prior to departure from the Loading Site, the following details will be completed on the Delivery Docket:

- i) Customer/Location
- ii) Date
- iii) Time
- iv) Region
- v) State Forest
- vi) Harvesting Plan No
- vii) Age Class (where relevant)
- viii) Compartment
- ix) Stack (where relevant)
- x) Operation Type
- xi) Product
- xii) Grade
- xiii) Length (where relevant)
- xiv) Diameter (where relevant)
- xv) Count
- xvi) Harvest , Load and Haulage Contractor
- xvii) Truck & Trailer Registration Number
- xviii) Truck Type
- xix) Driver, Grader,
- xx) Gross, Tare and Net Weight (where weight sales are by truck scales)
Tare weight will be predetermined at the commencement of each quarter on the basis of a certified weighbridge).

Where logs are to be accounted for by volume, the following additional details must be recorded for each log on the load:

- Length
- Diameter (refer to Table 1)
- Species Code (refer to Table 3)
- Product Code (refer to Table 4)

In the case of non-standard export poles, the length, the number of poles of that length and the product code must be entered on the Delivery Docket.

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2.3 Receipt of Delivery

Upon receipt of a load of logs at the Delivery Site the Delivery Docket must be signed, dated and marked with the time of delivery by the Company's representative. This signature will verify the load was received and that the Gross Weight (where relevant) has been verified.

2.4 Company Copy

The Duplicate copy of Delivery Dockets will be retained by the Company for 6 months.

2.5 Docket Errors

In the case of an error being made on the Delivery Docket mistakes must be crossed out and corrected with all changes initialled by the truck driver.

In the event of a Delivery Docket error being identified, (other than errors relating to log grade), the necessary amendment must be made on the Delivery Docket and such changes initialled by the Company's representative and the truck driver.

Errors relating to log grade are to be treated as a disputed log as these changes can only be made by a State Forests Officer.

2.6 Delivery outside of normal delivery hours

On the occasions where a mill representative is not available when the load is delivered and where specific arrangements have been made for delivery outside of normal delivery hours, the Contractor may unload the timber and leave the Duplicate copy of the Delivery Docket at a predetermined location.

These loads must be placed separately from other loads and clearly marked by the Haulage Contractor with the docket number, so as to enable its identification by a Company representative.

All details of the Delivery Docket will be completed by the Haulage Contractor except for the signature of the Company representative.

As soon as is practicable and no later than the 3.00 pm on the first working day following delivery a Company representative will sign the Mill copy of the Delivery Docket and fax it to the relevant Haulage Contractor. The Haulage Contractor will then be responsible for attaching the signed faxed copy, to the original Delivery Docket and forwarding it to State Forests.

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SECTION 3: SALE BY WEIGHT

3.1 Sale by Weight Using Truck Scales

Where logs are to be accounted for by weight as measured by truck scales, the following procedure must be followed:

3.1.1 Tare Weight

The tare weight of each truck/trailer combination delivering logs using the truck scale system will be calculated by State Forests from tare weight certificates provided by the Haulage Contractor. The tare weight certificates must be obtained from a weighbridge, which has current certification by the NSW Department of Fair Trading in the presence of a State Forests Officer

Haulage Contractors will be required to submit tare weight certificates to State Forests before commencing delivery and at quarterly intervals throughout the year.

Tare weights are to be certified measured using the normal running truck and trailer configuration (ie all bolsters, spare tyres and chains) and with a full tank of fuel.

3.1.2 Routine Weighing

Prior to the departure from the Loading Site each truckload of logs shall have the relevant details including the source of the logs recorded on a Delivery Docket. In addition the tare weight of the truck shall be recorded on the Delivery Docket.

The truck, following loading at the dump, is required to stop at the next available level and firm site, so that the gross weight can be determined. The time required before an accurate gross weight can be determined from the truck scales varies but generally is advised to be 5 minutes.

The gross weight and the calculated net weight shall then be recorded on the Delivery Docket. The site on which the gross weight is determined must be within 1Km of the log dump, unless otherwise negotiated with a State Forests Officer.

On arrival at the customer/location and prior to the commencement of unloading, the truck driver must request the Company to verify the gross weight recorded on the delivery docket by comparing it to that shown on the truck scales.

If the difference between the gross weight recorded on the Delivery Docket and the gross weight shown on the truck scales at the Delivery Site is greater than one percent (of the gross weight recorded on the Delivery Docket), the gross weight shown at the Delivery Site shall be recorded on the Delivery Docket. The initial gross weight recorded in the forest shall be deleted.

Any change to the gross weight resulting from the verification at the Delivery Site in accordance with the above will require the resultant net weight to be altered. Any such

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changes to the gross weight and net weight must be initialled by both the truck driver and a Company representative.

Where a full load of one product is not available the load may be made up with another Log Product. In this case an interim gross weight is recorded after the first product has been loaded and the final gross weight after both products have been loaded. Both the gross weights and the net weights of each product must be clearly indicated on separate Delivery Dockets. No more than two Log Products per load may be carried.

If one product is sold by log volume rather than weight, the measurements of each log of that product is to be recorded on a separate delivery docket.

3.1.3 Verification of Truck Scales and Audit Procedures

STATE FORESTS MUST ENSURE THAT EACH TRUCK MUST OBTAIN A WEIGHBRIDGE DOCKET TO VERIFY THE GROSS WEIGHT OF ONE LOAD EACH MONTH. THE WEIGHBRIDGE DOCKET IS TO BE ATTACHED TO THE ORIGINAL COPY OF THE DELIVERY DOCKET.

Truck scale weights as read at the weighbridge which are inconsistent with weighbridge recordings for gross weight by more than one percent must have weighbridge dockets attached to the Delivery Docket of every subsequent load until the required level of accuracy is obtained.

In the event that the truck scales are not verified to be within one percent of the weighbridge reading the gross weight recorded by the weighbridge will be used for accounting purposes. Otherwise the weights recorded on the Delivery Docket will be used.

State Forests may direct any load to be checked on a certified weighbridge at any time. Where the variation in gross weight as measured by truck scales and as measured by public weighbridge exceeds +/- 1%, the certified weighbridge measurement will be accepted and the weighbridge docket attached to the original copy of the Delivery Docket for forwarding to State Forests by the Haulage Contractor.

3.1.4 Inoperable Truck Scales

If truck scales become inoperable or inaccurate, alternate methods of accounting for the load will be made between State Forests and the Company.

Alternate methods of accounting may include weighbridge measure or log volume measure.

3.2 Sale by Weight Using Weighbridges

The gross weight of the truck, trailer and load is to be recorded on an approved printed docket on arrival at the Delivery Site.

The tare weight of the truck and the trailer and the net weight of the load is to be printed on the docket referred to above following the unloading of the truck. The tare weight, gross weight and net weight are to be recorded on the Delivery Docket and a copy of the weighbridge docket is to be attached to the original copy of the Delivery Docket.

SECTION 4: DISPUTED LOGS

A disputed log is a log where the Company disagrees with either the log details or the grade of the whole or part of the log. A log may also become a disputed log if the log details are entered on the docket in error and this was not detected and corrected prior to the Haulage Contractor leaving the Delivery Site.

The Company, if disagreeing with the log details or the grade, must notify States Forests of the disputed log within three business days of the delivery of the log.

The disputed log must be set aside in a place that it can be readily and safely inspected.

A State Forests Officer will inspect the log within five working days of being notified.

Where the State Forests Officer determines that the disputed timber fails to meet the Specifications, or that there has been an error on the Delivery Docket, action as determined in Table 5 below will occur.

Any dispute over a decision made by a State Forests Officer regarding disputed logs, should be referred to the Regional Log Supply Manager for resolution.

Table 5 - Disputed log actions

DOCKET OR LOG GRADING ISSUES						
Problem	Details	Re-hammer and brand log	Complete 'Assessment of Disputed Logs' form	Arrange to shift log(s)	Complete a new docket	Recalculation of customer account
Docket	Log measurement information incorrect		Yes			Yes
	Load weight information incorrect		Yes			Yes
	Logs incorrectly tallied		Yes			Yes
Log Branding	Incorrect branding	Yes	Yes			Yes
Regrading	Change grade or reject	Yes	Yes			Yes
	Re-servicing	Yes	Yes			Yes
Redirection	Redirected following regrading	Yes	Yes	Yes	Yes	Yes
	Delivery to incorrect location by haulier			Yes	Yes	Yes
	Rejects loaded and delivered by haulier		Yes	Yes	Yes	Yes

SECTION 5: DEFINITION OF TERMS

- Delivery Docket** : Means a sequentially numbered docket for recording the details of each truck load of logs as set out in Clause 1.3
- State Forests** : Means the State Forest Regional Office of the Region from which the load was obtained.
- Loading Site** : Means the point from which log product is loaded onto a haulage vehicle
- Regional Log Supply Manager** : Means the State Forests employee with responsibility for managing delivered log sales to the Customer.
- State Forests Officer** : Means an employee of State Forests
- Harvesting Contractor OR Haulage Contractor** : Means a Contractor engaged by State Forests

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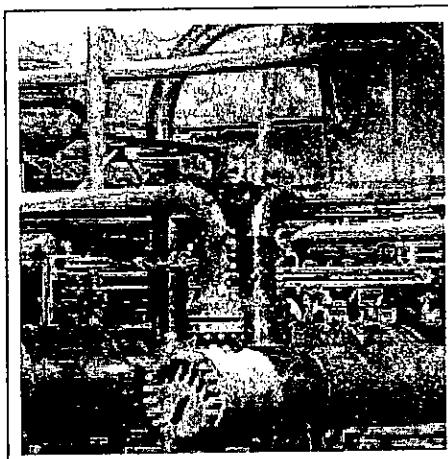
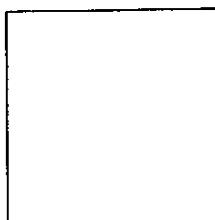
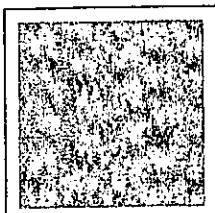
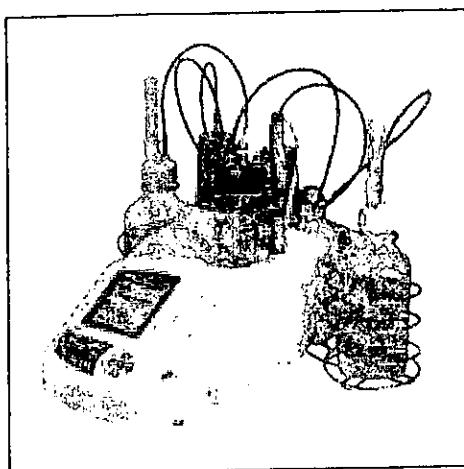
SCHEDULE 7

KAPPA NUMBER OF PULP (RADIOMETER ANALYTICAL SAS PAPER)

TTIP03-01MIN kappa definition.pdf

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Kappa Number of Pulp



Introduction

Kappa number is used to describe the relative hardness, the degree of delignification obtained in a chemical pulping process, the bleachability or whitening aptitude of a pulp.

However, it should be noted that there is no general and unambiguous relationship between the Kappa number and the lignin content. This depends on the type of wood and the delignification procedure.

Principle

Kappa number definition: The number of millilitres of 20 mmol/l (0.1 N) potassium permanganate solution consumed by one gram of moisture-free pulp under the conditions specified in this method.

The results are corrected to 50% consumption of the permanganate added. Disintegrated pulp is allowed to react with a specified amount of potassium permanganate

solution for a given time. The amount of pulp is chosen so that 50% of the permanganate is left unconsumed at the end of the reaction time. The reaction is terminated by adding potassium iodide solution, and the free iodine is titrated with sodium thiosulphate solution. The value so obtained is corrected to exactly 50% consumption of the permanganate. Analysis has to be performed at $25^{\circ}\text{C} \pm 0.2^{\circ}\text{C}$.

For a non-thermostated vessel, the temperature has to be between 20°C and 30°C .

Electrode and reagents

MC408Pt Combined Reference/
Metal Electrode, platinum, length
180 mm, Type 7 plug (part no.
945-390)
T202 Temperature Sensor

4 M (8 N) Sulphuric acid.
Preparation: slowly add 224 ml of
concentrated acid to 600 ml of
distilled water. Use distilled water
to obtain a total volume of one
litre. Thermostatting is omitted

during titration; the stock solution
should therefore be stored at the
room temperature at which the
titration is to be performed
(between 20°C and 30°C).

0.02 M (0.1 N) Potassium
permanganate
Preparation: exactly weigh
approximately 3.2 g of potassium
permanganate (KMnO_4 , reagent
grade) and dissolve it in a 1 l
volumetric flask with deionised
water. Standardise the solution
with Mohr salt in strong acidic
media or use a standardised
Sodium thiosulphate solution.
Pour the solution into a brown
glass bottle.

Approx. 1 M (1 N) Potassium
iodide
Preparation: dissolve 166 g of
potassium iodide (KI, reagent
grade) in 1 l of deionised water.
Pour the solution into a brown
glass bottle.

0.2 M (0.2 N) Sodium thiosulphate
Preparation: exactly weigh
approximately 50 g of sodium
thiosulphate pentahydrate
($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ reagent grade) or

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Kappa Number of Pulp

31.8 g anhydrous $\text{Na}_2\text{S}_2\text{O}_3$.
 Dissolve it in a 1 l volumetric flask with degassed deionised water.
 The solution may be stabilised by adding 0.4 g of dry Na_2CO_3 per litre of thiosulphate solution. If more than 25 ml is poured to titrate one sample, it would be advantageous to use a more concentrated solution. Pour the solution into a brown glass bottle. Standardise the solution against iodate/iodide in acidic media (see Redox Titration Application - TTEP01-08MIN).

Titration settings

First programme the following primary methods

1st method titration settings

ID: Add H2SO4+KMnO4
Mode: Addition
No. of additions: 2
Simultaneous add: Yes
Delay after add.: 00min00s
Reagent 1: H2SO4 4N
Volume: 20.00 ml
Reagent 2: KMnO4 0.1N
Volume: 5.00 ml
Auxiliary output: No

2nd method titration settings

ID: Kappa blank
Mode: End Point
Measure: mV
Temperature: Probe
No of test: 1
Notification: No
Cell grounding: Reference
Blank: No
QC sample: No

Parameters

Electrode: MC408Pt
Temp. sensor: T202
Titrant: Na2S2O3 0.2N
Predose until: 0.0 ml
Start timer: 00min00s
Maximum volume: 25 ml
Direction: Decreasing mV
Back titration: No
Minimum speed: 0.20 ml/min
Maximum speed: 5.00 ml/min
Auxiliary output: No

Addition: Yes
Addition reagent: KI 1N
Volume: 4 ml
Start addition: Initial
Delay after add.: 00min00s
End point no.1: 277 mV
EP delay: 00min10s
Proportional band: 200.0 mV

Delay after add.: 00min00s
End point no.1: 277 mV
EP delay: 00min10s
Proportional band: 200.0 mV

Sample

Dilution: No
Sample amount: 1 ml

Result

No. of results: 1
No. of equations: 0
Result factor: No
Acceptance criteria: No
No. of digits: 5

Result 1

ID: Result Blank
Result unit: ml
Global variable: G1

Printouts

Title: Kappa no. blank
Detail level: Medium
Curve: Yes

3rd method titration settings

ID: Kappa sample
Mode: End Point
Measure: mV
Temperature: Fixed 25°C
No of test: 1
Notification: No
Cell grounding: Reference
Blank: No
QC sample: No

Parameters

Electrode: MC408Pt
Titrant: Na2S2O3 0.2N
Predose until: 0.0 ml
Start timer: 10min00s
 (see notes 7)
Maximum volume: 25 ml
Direction: Decreasing mV
Back titration: No
Minimum speed: 0.20 ml/min
Maximum speed: 5.00 ml/min
Auxiliary output: No
Addition: Yes
Addition reagent: KI 1N
Volume: 4 ml
Start addition: Initial

Sample

Dilution: No
Sample amount: 1.500 g
 (see notes 1)

Result

No. of results: 1
No. of equations: 2
Result factor: Yes
 (see notes 4)
Acceptance criteria: No
No. of digits: 1 (see notes 6)

Result 1

ID: Na2S2O3 cons.
Result unit: ml
Global variable: No

Equation 1

ID: Kappa number
Unit:
Formula: $(G1-V1)*CT*F/(0.1*SA)$
 (see notes 5)
Global variable: No

Equation 2

ID: Volume KMnO4 (see notes 3)
Unit: ml
Formula: $(G1-V1)*CT/0.1$
Global variable: No

Printouts

Title: Kappa number
Detail level: Medium
Curve: Yes

Then programme the following coupled methods using the previously programmed primary methods.

ID: KAPPA no. Blank
Mode: Coupled
No. of test: 1 (see notes 2)
Autochaining: Yes
Method 1: Add H2SO4+KMnO4
Method 2: Kappa blank

ID: KAPPA no. Sample
Mode: Coupled
No. of test: 1 (see notes 2)
Autochaining: Yes
Method 1: Add H2SO4+KMnO4
Method 2: Kappa sample

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Kappa Number of Pulp

Procedure

When the system has been left unused for a period of time, flush all burettes simultaneously from the burette menu to remove air bubbles trapped in tubing.

Blank analysis

- 1- Pour the amount of water used for sample analysis into the Kappa titration vessel.
- 2- Select and run the **KAPPA no. Blank** method.
- 3- Repeat according to no. of test (replicates) programmed in the method.
- 4- To avoid deposits on propeller, electrode, etc., remove the reaction vessel and thoroughly rinse the different items immediately after each blank determination.

Sample analysis

- 1- The pulp has to be oven dried before use. Prior to weighing the test samples, condition them for at least 20 min. in the atmosphere around the balance.
- 2- Weigh out to the nearest 0.001 g the amount of pulp specimen, which will consume approximately 50% of the potassium permanganate solution. The permanganate consumption must be between 30 and 70%. Transfer into the Kappa titration vessel.
- 3- Disintegrate the test specimen in 425 ml of distilled water until free of fibre clots and undispersed fibre bundles. Avoid methods of disintegration, which involve extensive cutting of fibres. The distilled water should be at room temperature.

- 4- Continuously stir the suspension so as to produce a vortex about 25 mm deep but not fast enough to introduce air into the mixture.

- 5- Select and Run the **KAPPA no. Sample** method.

Notes

- 1- A balance can be connected to the titrator via the corresponding identified serial port for automatic acquisition of the weight.
- 2- Number of replicates can be increased; average results are stored and expressed with their corresponding standard deviation. The average result of intermediate calculations (e.g. blank) is automatically used for final calculations.
- 3- Calculated volume of 0.1N permanganate actually consumed by the sample.
- 4- The sample amount weighed has to be sufficient to consume 50% of the KMnO_4 initially added. The table below gives values for "F" for KMnO_4 consumption between 30 and 70%.

Factor F is entered together with the sample ID and sample at method start. It is set by default to 1 and corresponds to 50% of the KMnO_4 initially consumed by sample.
- 5- A factor equal to $(1+0.013*(25-T))$ can be used for a correction temperature of the Kappa number if a thermostated bath is not available. The temperature during the titration must be between 20°C and 30°C. The equation to enter becomes:
$$\frac{((G1-V1)*CT*F}{(0.1*SA))*(1+0.013*(25-T))}$$

This assumes the last temperature reading "T" corresponds to the average temperature during the titration.

- 6- The Kappa number is usually reported as follows: under 100 to the nearest 0.1 giving No. of digits = 1 over 100 to the nearest whole number giving No. of digits = 0.
- 7- A 10-minute reaction has been selected in this application, this duration can be modified depending on the standard the user needs to follow.

Kappa Number of Pulp

% of KMnO_4 consumption	0	1	2	3	4	5	6	7	8	9
30	0.958	0.960	0.962	0.964	0.966	0.968	0.970	0.973	0.975	0.977
40	0.979	0.981	0.983	0.985	0.987	0.989	0.991	0.994	0.996	0.998
50	1.000	1.002	1.004	1.006	1.009	1.011	1.013	1.015	1.017	1.019
60	1.022	1.024	1.026	1.028	1.030	1.033	1.035	1.037	1.039	1.042
70	1.044									

Literature

Standard method for Kappa
determination TAPPI T236, SCAN-
C1.

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