



# REPORT

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NEW ZEALAND

## PRINCIPLES OF PLANNING FOR FOREST HARVESTING

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### INTRODUCTION

The 1981 LIRA Tactical Planning Seminar identified a need for a guideline/checklist for planning logging operations which would be useful to a wide range of companies in the industry. This report is intended to go part of the way in fulfilling that requirement.

Planning for forest harvesting is basically no different from planning for any other production process. It can be divided into three levels:

- INDICATIVE - initial feasibility
- TACTICAL - setting up operation requirements
- OPERATIONAL - daily management systems

Each of these three levels embraces three closely related activities:

- Collection and organisation of data
- Examination and testing of various possible courses
- Formulation of plans

This report proposes the three levels of planning and describes the interrelationship between them. Factors which have to be considered at each stage are listed.

### INDICATIVE PLANNING

Before a decision is made to log any forest or part thereof, a series of investigations have to be undertaken. The major factors that have to be taken into account at this, the indicative level, are:

Broad Based Mensuration Data - This will be needed to give reasonable estimates of age class structure, average tree sizes, potential annual volume available for harvesting, and potential product types, etc. The National Planning Model provides this data on a regional basis.

Topography - The proportions of categories of topography that may have a direct affect on the selection of possible logging systems need to be defined from topographic maps and photographs.

Potential Markets and Utilisation Plants - Although the information may not be accurate it is needed:

- (1) To ascertain potential economic viability of harvesting and processing.
- (2) For the calculation of likely transport leads and maximum load sizes.

Local Authority Attitudes - If forestry is a conditional land use then there may be restrictions placed on harvesting. There may also be requirements for the forest owner or customer to pay for upgrading and maintaining county roads.

Catchment Board Attitudes - If the soil types are likely to be sensitive to logging then all possible means have to be examined to ensure that catchment board standards are met. If possible include catchment board personnel in the consultation at this stage.

Roading Systems - Ensure that the arterial and secondary roading networks are correctly located and to a satisfactory standard. Check to see if major design or construction could be required.

Logging Systems - The potential systems will have to be listed and decisions made on which would be most suitable. It may be necessary to conduct trials to see which systems meet management constraints.

Capital and Operating Costs for Logging and Transport - Following on from the potential logging and transport systems, it will be necessary to look broadly at possible capital and operating costs. Decisions will have to be made as to whether the average landed cost will be acceptable to the project.

Labour Supply and Skills - The necessary skills for logging need to be available in the area concerned. If not, training programmes will have to be instituted or skills imported from other regions.

Planning and Management Skills - The organisation must have adequate planning, management, and supervisory skills to control the operation. If not, they must be trained or bought in.

Sale Type - Is the Sale Contract likely to be Log Sale or Stumpage? This will affect planning, management, and supervision.

## **TACTICAL PLANNING**

If after the initial analysis it is decided to go ahead and log an area of forest, then another set of factors have to be considered. These are sub-divided into two, primary and secondary. The primary factors have to be assimilated before the secondary factors can be actioned.

### **PRIMARY FACTORS**

Detailed Assessment Data for Volumes and Quality of Wood Resource - This is probably the most important set of data required at the tactical level. Virtually all consequent decisions rely on precise mensuration data.

Sale Contract - The following points need to be determined:

- + Type of sale - this may already have been determined (i.e. stumpage or log sale.
- + Pricing point - whether for on-skid, on-truck, or at-mill.
- + Roothing - responsibility for construction and maintenance.
- + Length of sale, right of renewal, etc.
- + Weight - volume conversion procedures.

Logging and Transport, and Equipment System Design - This is important to operational organisation cost estimating and scheduling of production.

Assembly of Productivity Data and Work Study Standards - This information is needed for each system selected so that potential production from each area can be calculated along with the cost per unit of production.

Contractor and/or Wage Gang Capital and Cash Flow Requirements - This pertains to both logging and transport. If wage gangs are to be used the capital cost of equipment and cash flow requirements will need to be calculated. If contractors are to be the prime source of production and transport, then annual operating costs need to be calculated.

Preparation of Annual Cutting Plans - These plans denote what volumes of specific species are to be cut from particular areas.

Preparation of Detailed Logging Plans - These plans consist of topographic maps giving position of roads and landings, plus a detailed analysis of how the operation is to be carried out with all relevant cost data.

## SECONDARY FACTORS

Catchment Board Approval of Logging Plans - In some parts of New Zealand, particularly where a Section 34 of the Soil Conservation and Rivers Control Act is in force, all logging plans have to be approved by catchment authorities.

District Council Approval of Logging and Transport Plans - Many district councils are likely to want to control some aspects of forest harvesting. Logging and transport plans may be required to be approved before they can be actioned.

Forward Roading - Roading should be formed at least 12 months prior to logging to allow for consolidation. Road stripping and formation operations have to be planned and actioned. The logging plan is needed before this operation can begin.

Inform Outside Organisations of Start-up Dates - If this is a new operation then organisations such as the appropriate workers unions, Department of Labour, etc., will need to be informed of when operations are likely to commence so that they can provide the necessary servicing.

Advertise Contracts - Logging and transport contracts need to be advertised and subsequent negotiations undertaken.

Equipment for Wages Operations - If undertaking a wages operation appropriate equipment will be required.

The culmination of the tactical planning exercise is the production of the logging plan, which, after approval by the harvesting organisation and other agencies, such as forest owners, catchment authorities and district councils, can then be put into action.

## OPERATIONAL PLANNING

The final level of planning is the preparation of day to day management systems. This provides a control system for the overall operation. Information is needed so that the manager can ascertain if the operation is progressing according to plan.

If there are differences between what was planned and what actually happened, then an analysis of information produced by the control systems will allow appropriate changes to be made either to the operation or to the next generation of plans.

Operational planning includes:

Production Cost Control - The establishment of cost control methods by which actual costs can continually be compared to estimated costs.

Quality Control Systems - The establishment of systems by which cutover, wastewood, residual crop and tree damage (if thinning) can be assessed if necessary.

Log Cutting Strategy - Development of processing systems to obtain maximum value recovery from logs.

Product Output Control - The establishment of a system so that the production of log volumes by product type can be compared against the assessment data. This enables both a check on precision of assessment data and on attempts to maximise value.

Contingency Plans for Unpredictable Events - These will indicate the desirable response to fluctuating markets, seasonal weather patterns, strikes, etc..

Accident Prevention Schemes - Setting up a system of training, education, incentives, etc. to ensure the maintenance of accident free operations.

Logging System Review - Provision needs to be made for periodic reviews of the planning systems to ensure that operational systems keep pace with new developments.

## SUMMARY

Planning for forest harvesting can be divided into three broad levels; indicative, tactical, and operational. Within each of these levels data has to be collected, examined, and decisions made. In the case of new operations, all three levels may have to be actioned; in the case of on-going operations, only the tactical level may need to be actioned.

At the indicative level the complexity of some harvesting proposals requires the utilisation of specialists from many fields, e.g. economists, hydrologists, geologists, engineers, logging planners, and foresters, etc. At the tactical and operational levels, the logging planner and management team co-operate to produce a workable plan.

Time horizons have to be taken into account when formulating harvesting plans. The planning team have to build a rapport with outside agencies, such as catchment boards, district councils, port authorities, and the public. Without adequate communication between all parties likely to be affected by the harvesting schemes, there could well be frustration and unnecessary delays.

The large volume of wood available in New Zealand for harvest in the near future, and the fact that the wood is on steeper country with consequent potential environmental problems, makes it imperative that full consideration is given to the planning principles outlined in this report.

For Further Information Contact:

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