SESSION 5
Paper (c)

SMALL WOODLOT PLANNING

F.P. Wallis
P.F.Olsen & Co.Ltd.

The brief for preparing a background paper to a group study approach on planning the logging of small woodlots has required examination of the following two main features:

a) The future main characteristics of the resource in the context of the total forest industry.

b) The various factors that must be taken into account that may be regarded as specific to planning the small woodlot operation.

It can be fairly established that beyond the period 1990 the woodlot resource established under loan and grant schemes will make a meaningful contribution to the forest industry potential in New Zealand from a national viewpoint. This has been primarily due to incentives to afforestation in the 1960's and 1970's and Figure I shows the broad age class distribution of the resource established since 1960 under grants and loans. There is an additional area of small woodlots which have also been established outside the loan/grant scheme by companies and individuals that is yet undefined in area, but currently being surveyed by the NZ Forest Service.

In examining this national age class distribution in resource size in more detail, apart from showing the significant increase in private woodlot plantings since 1971, with only limited potential logging capability development for the resource established before this time, problems arise in quantifying the nature of the small woodlot resource distribution since some quite large forest projects had been implemented under the government incentives. In defining the size of a small woodlot, it has been assumed to be a forest or a five year age class, that due to soil conditions, contour and location is unlikely to support more than 4 months continuous logging by a single tractor crew and will therefore be unlikely to exceed 20 hectares in size.

When one tries to determine the number of small woodlots within this size constraint and the significance of their total area in relation to national or regional resources, problems are encountered. Although the NZ Forest Service has commenced collection of data on woodlot sizes, growth rates, soil types,

logging methods (tractor/hauler) and access, the analysis is far from complete. Data has been obtained for the Auckland and Rotorua planning districts being the only information available at present and an attempt has been made to summarise some of the main patterns that emerge if we can assume the data represent a very crude sample of the national situation. The patterns that appear to be present are:

a) There is a similar number of small woodlots or woodlot age classes being established as larger ones, contrary to the sometimes popular view that small woodlots would predominate in numbers (See Figure 2).

b) The collective area of small woodlots established under the grant/loan schemes appear to be significantly less than the larger grant/loan projects even though they are similar in number (Figure 3), as shown in the case of Rotorua planning district in particular.

However, this picture needs to be examined further and checked for the overall country situation as it raises the question of whether the small woodlot by size definition, will have any role of significance at all in forest industry planning and markets, due to the very small nature of the resource relative to larger grant, company and State projects.

c) The type of logging (hauler/tractor) will vary from one region to another as the Auckland and Rotorua data indicate (Figures 4 and 5). The easier, free draining Rotorua soil types permit a much higher use of tractors than Auckland for example, with the latter's pattern of woodlot size, age class distribution, soils and logging methods being more likely to be repeated elsewhere in the country.

Moving onto the various factors that must be taken into account in planning woodlot logging the list is lengthy and can no doubt be added to substantially by seminar participants. Each must be carefully considered, no matter how minor, at the onset of planning each block, as they can have a very significant impact on the productivity and costs of production, due, in last analysis, to the small scale of each operation. For example, a recent log export operation requiring harvesting of 7500 cubic metres from a series

of 2-6 hectare woodlots over a 2 month period generated a log/load cost of $17 per cubic metre without any allowance for pre-assessment, sale negotiation and planning costs. The types of factors we are concerned with are numerous but the following are some of the more common:

1. Measurement and analysis of stand area and volume.
2. Planning and negotiation of timing of harvesting and the terms and conditions under which the operation be carried out.
   Excessive legal costs in settling contracts that may be incurred through local authority statutory requirements or difficult forest owners who are not members of a marketing co-operative who would be expected to have a standard agreement format.
3. Obtaining clearances from local authorities to harvest and transport, e.g. Catchment Boards for any restrictions under Water and Soil legislation and District Councils who may have set restrictions on load sizes for transport or close roads in wet conditions to avoid pavement damage.
4. Public road access may require some realignment prior to harvesting to permit a reasonable log length to be carted and this should be done at least six months in advance at the latest to permit pavement consolidation for high loadings
5. Access through, and even landings in, a neighbours property may have to be negotiated with protective covenants as the most viable approach to logging a block.
6. Fences must be stripped and temporary ones may need to be erected for stock control and new fences erected after logging.
7. Equipment shifting costs and times for tractors and loaders and rigging times for haulers are very significant.
8. The formation and preparation of landings and primary extraction leads in many parts of New Zealand must be carried out well in advance of harvesting to allow adequate consolidation particularly where soils are heavy and greasy.
9. The requirement for an availability of metal for landings and access to them must be carefully checked as in many parts of New Zealand metal is both expensive and scarce.

10. The need for local accommodation for a highly mobile operation demanding highly skilled personnel with reasonable needs for living standards, must also be checked as this is often expensive.

11. Given correct equipment selection and availability for the stand size and characteristics, it is important that a reasonable and experienced estimate be made of average daily productivity after allowance for downtime due to the seasonal weather conditions under which the operation is to be carried out. The maintenance of a viable continuous logging operation concentrated on small woodlots will create the need for classifying them into summer and winter logging categories if reasonable levels of productivity are to be obtained.

12. Continuous review and inventory by the logging operator of capital, operating and labour cost inputs and changes as he will be operating at the extreme end of the scale for his industry in terms of his sensitivity to energy cost movements and market fluctuations relative to larger scale main forest operations within a region. The level of risk potential profit is exposed to in this type of operation will involve a high degree of sensitivity to pricing structures.

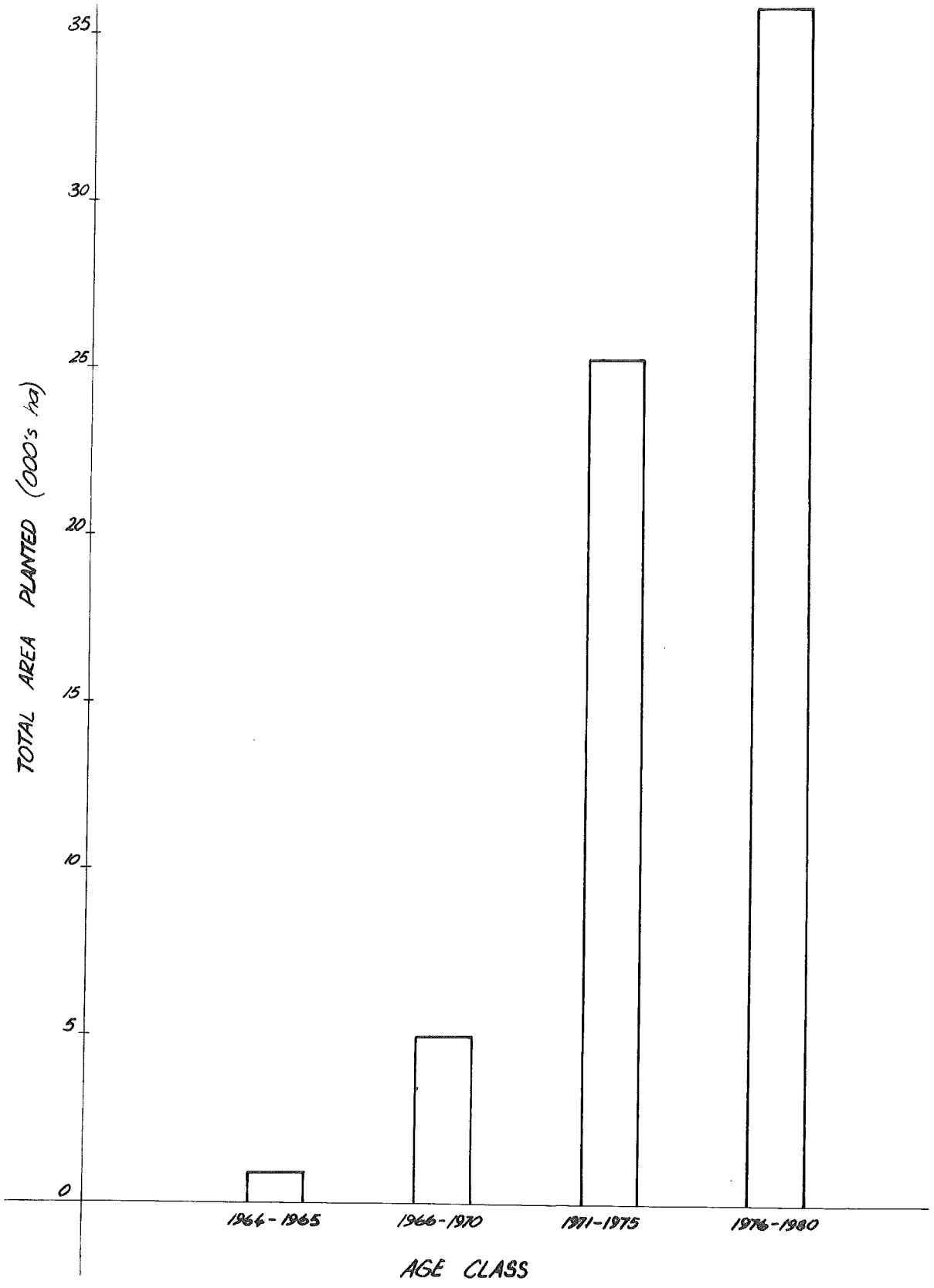
As a brief summary to this introduction to logging of small woodlots it is fair to say that for the operation to proceed <u>profitably to all parties</u> towards the turn of the century in the context of local and overseas markets, and jointly in competition with the harvesting and utilisation of other regional suppliers, the following will be demanded:

a) A relatively small and strongly localised deployment of equipment with a workforce that requires a high level of versatility and skills.

b) A high regional input into a joint co-operative effort by small forest owners in harvesting and market strategy planning that is carried out in strong liaison with skilled logging industry planning personnel.

FIGURE 1

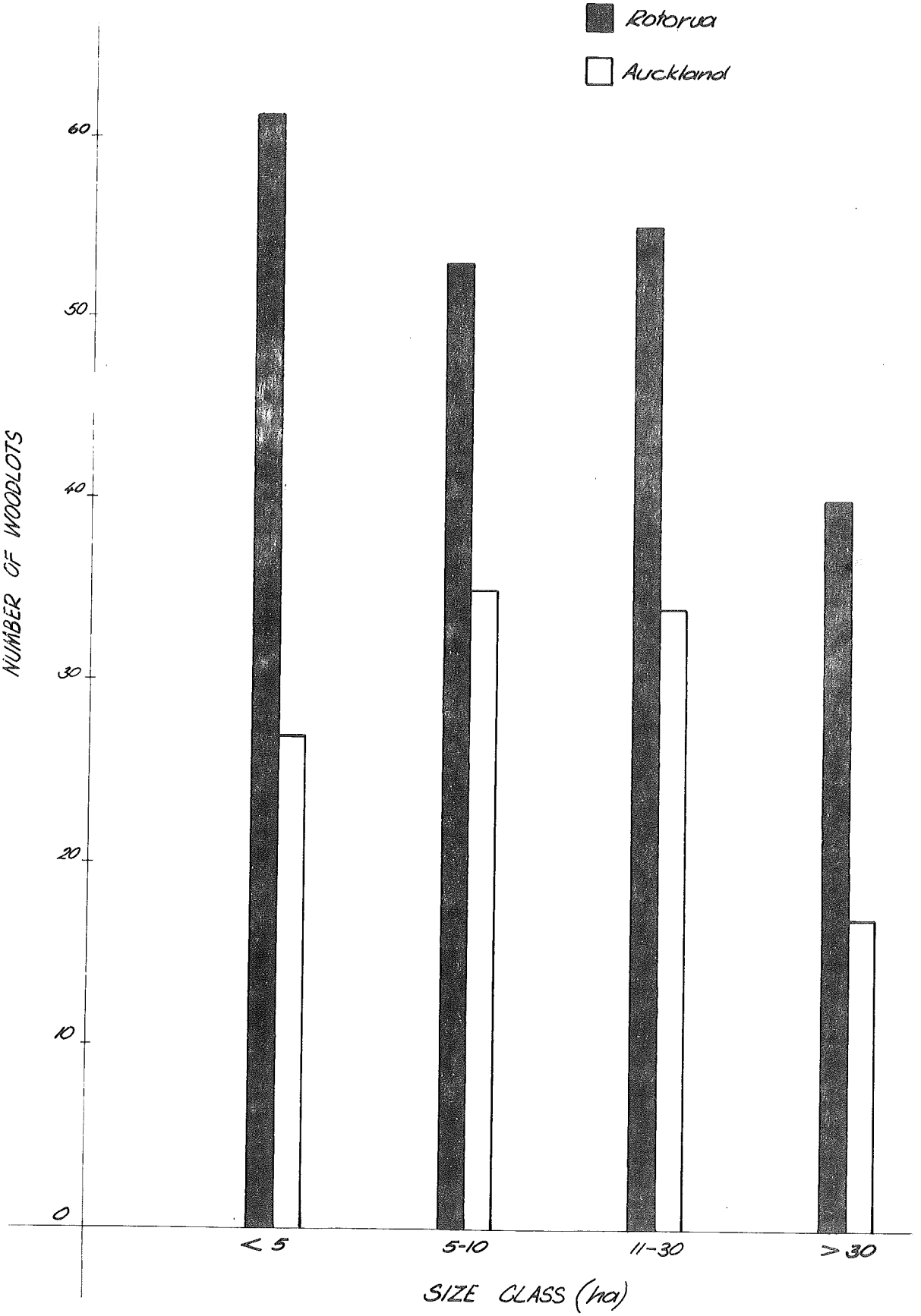
N.Z. WOODLOT AGE CLASS DISTRIBUTION
LOAN/GRANT SCHEMES



Akla

FIGURE 2

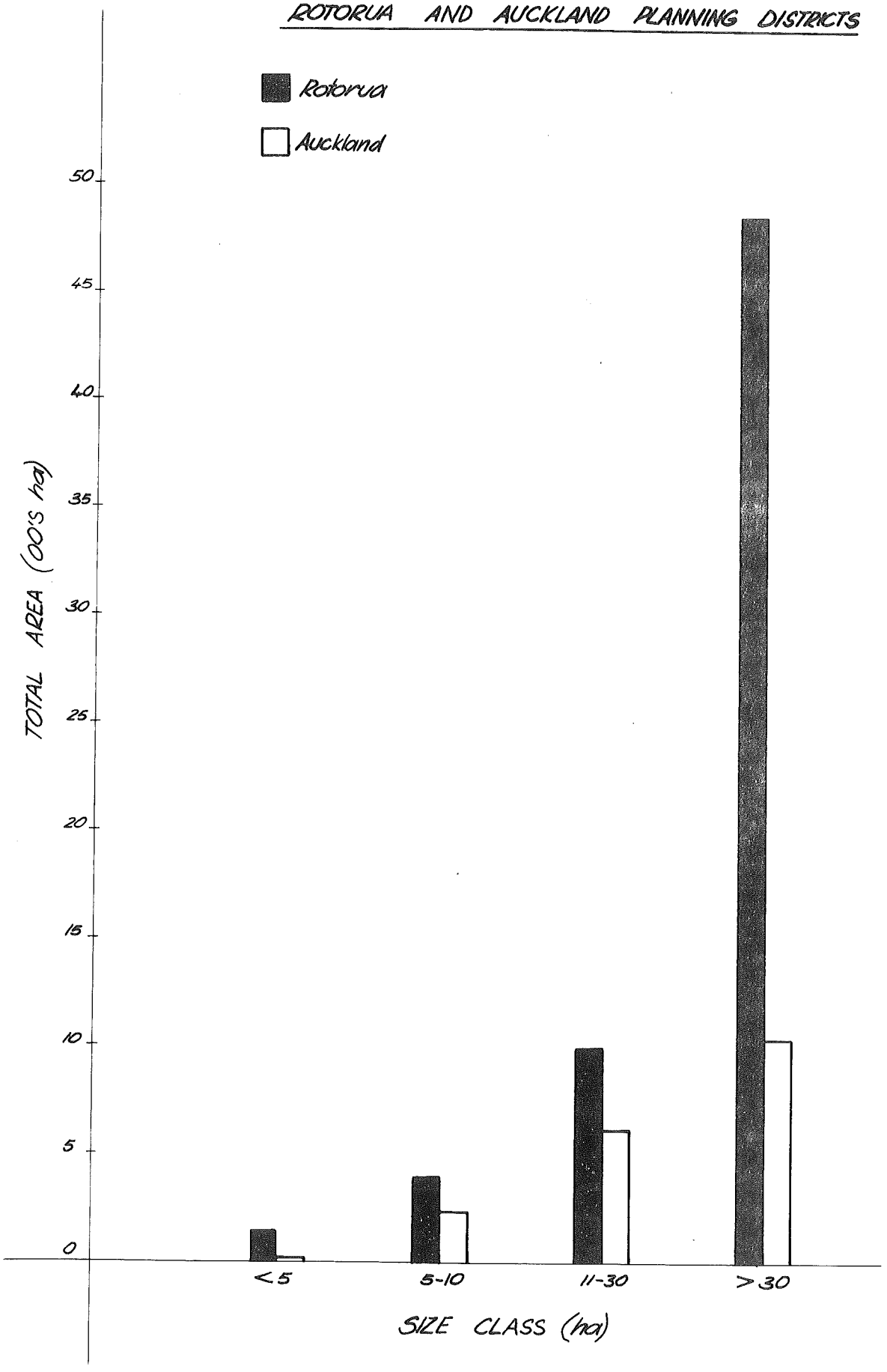
WOODLOT SIZE CLASS DISTRIBUTION ROTORUA AND AUCKLAND PLANNING DISTRICTS



A/66

FIGURE 3

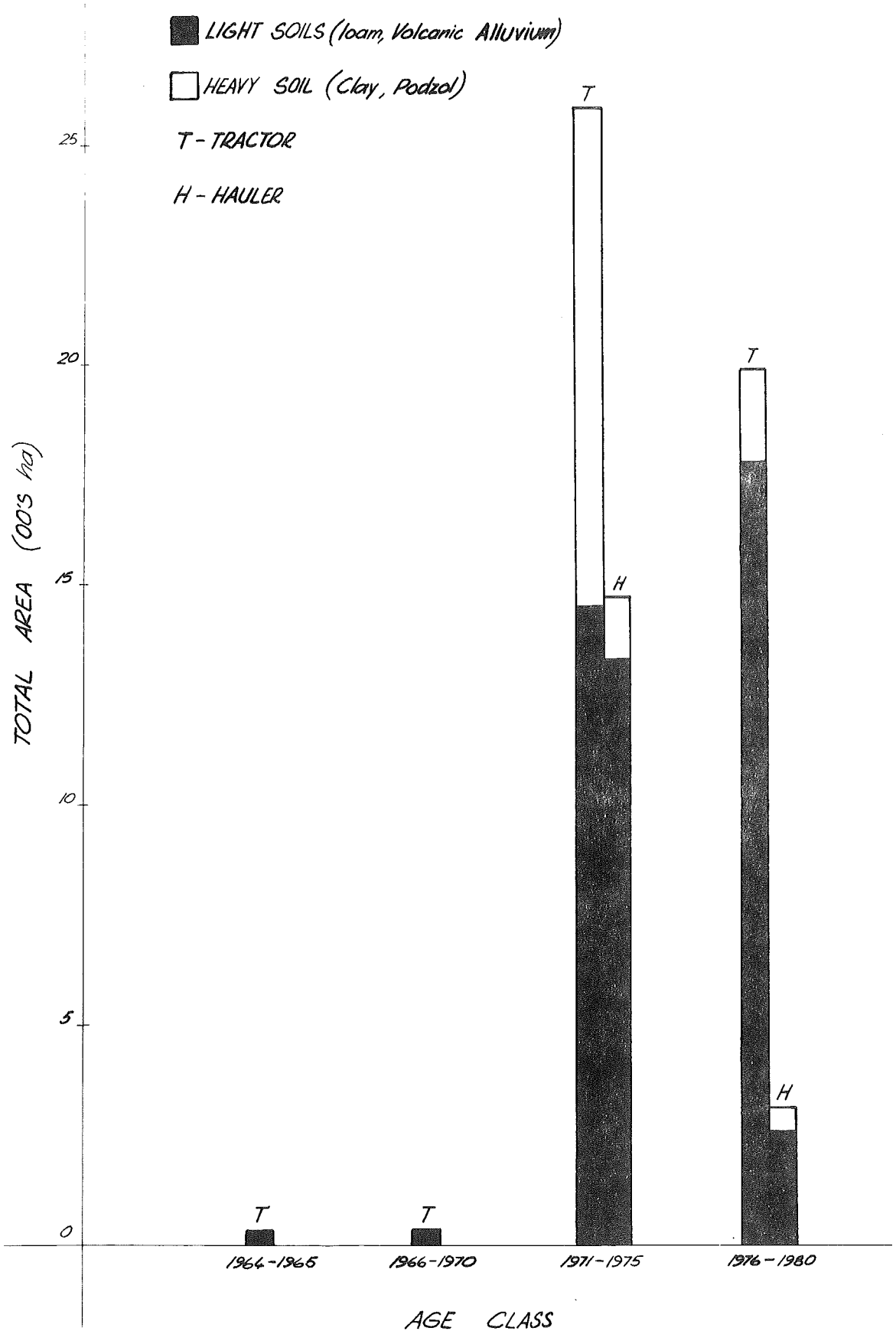
TOTAL AREA BY WOODLOT SIZE CLASS
ROTORUA AND AUCKLAND PLANNING DISTRICTS



A/6/c

FIGURE 4

LOGGING METHOD AND SOIL TYPE BY AGE CLASS
ROTORUA PLANNING DISTRICT

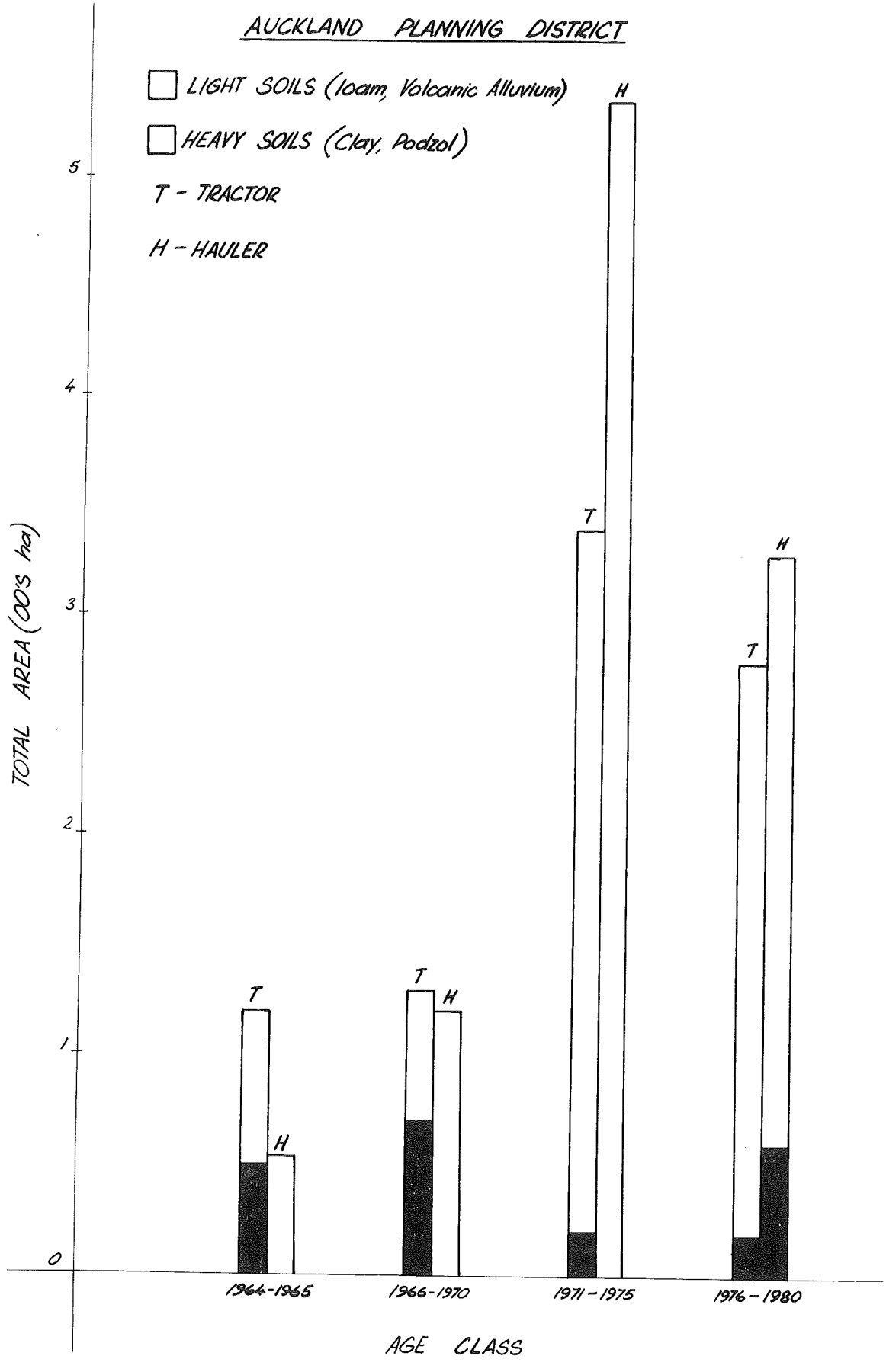


A/6ld

FIGURE 5

LOGGING METHOD AND SOIL TYPE BY AGE CLASS

AUCKLAND PLANNING DISTRICT



A/61e