

METHOD OF MANAGING OLD TREES

INDIVIDUAL TREE MANAGEMENT PLANS (ITMPS) & RETRENCHMENT PRUNING

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If it is feared that a tree is likely to be lost from decline in vitality and/or from structural collapse based on the viability assessment an ITMP is prepared to achieve sustainable viability.

The ITMP is based on the observation that old trees have low tolerance to major disturbance their environment or growth conditions but often show a favourable capacity for adapting to minor changes. The ITMPs focus on the living-soil and rooting environment as much as on the signs of tree health and viability and involves an assessment of tree condition to develop a management treatment programme with the objective of improving tree health and structural condition to ensure sustainable & viable tree. The ITMP involves the following:

- an assessment of the risk of mechanical failure within a period of thirty years
- an assessment of the tree's tolerance to disturbance by assessing the tree's *vigour* (vital capacity of the tree [inheritance]) & *vitality* (current vital signs particularly the form of the tree and how it has responded to past and current growth conditions).
- based on the above assessment , if it is considered that the tree is compromised from structural failure it is important to assess whether it is possible to reduce the crown height and the branch end-weight (or branch length) to improve structural stability
- If the answer to the above is yes then it is necessary to decide what the ultimate/optimum height and branch weight (or length) that it is estimated could be tolerated by the tree

As an ITMP is long term and usually involves some form of crown modification it is advisable that the gradual process involving the *retrenchment pruning* method be considered.

RETRENCHMENT PRUNING

Reduction potential & setting goals

Retrenchment Pruning is the staged reduction of a tree's crown intended to mimic the natural ageing process. Retrenchment pruning attempts to mimic the way the crown of a tree changes in form, growth and habit through the transition to the ancient stage from the fully mature stage of growth. During this stage hormone regulation appear to alter in the canopy resulting in die-back and the development of growth in lower internal portions of the crown.

Whether it is appropriate to carry out retrenchment pruning will be informed by the assessment of tolerance to disturbance. This assessment will also be used to estimate of the level of reduction to achieve tree viability and set the long-term goals for tree scale (size and proportions), as well as the time that it would take to achieve a remodelled crown without compromising the tree itself over the long-term ITMP.

The formulation of the ITMP involves estimating the Treatment Phase (duration) and Treatment Cycle (number of treatments and period between treatments). To assess these it is necessary to estimate the ultimate reduced height and/or branch length that you would expect could be tolerated by the tree and based on the estimate of the vitality of the tree that would support this process, (and the eventual size of wounds resulting from the process of reduction) examples of Treatment Phases might be of 24 or 30 years with Treatment Cycles of 4 to 6 years.

It is important to estimate what is the overall Treatment Phase necessary to carry this out. i.e. what period of time (over how long) would it be appropriate to spread the arboricultural treatment to achieve the objective set for the ITMP.

Treatment Cycles involve a number of operations but the First Operation (Intervention Treatment) is usually the most crucial. The first operation will usually start the retrenchment programme pruning based on the ITMP if the vitality is moderate to high and well distributed about the crown and the prognosis is favourable to a low level of reduction of the foliar mass.

Treatment options can include a range of arboricultural options many of which might not be based on tree surgery.

Non tree surgery / pruning options might include:

- applying wood mulch
- soil conditioning / de-compaction
- restricting access / stopping intensive use (e.g. grazing, pedestrian activity, stopping activity that might lead to eutrophication etc.) within main area of the rooting zone (usually up to 15x diameter)
- Removing / reducing shade from competition trees (always phased)

Tree surgery options / pruning options might include:

- vigour pruning: fine tip pruning to manage hormone regulation to promote internal epicormic crown growth
- changing crown shade regime to promote internal crown epicormic growth
- vigour pruning by scribing (minor bark wounding) selectively targeted to branches to stimulate epicormic growth
- initiation of retrenchment pruning (to pollard or maiden) intended to reduce transportation paths over the long-term and restructure the crown around a lower centre of gravity
- increasing nectar source for invertebrates
- maintaining the tree at a reduced (%) scale
- reducing end-weight (%) to selected loaded branches to the branch system showing signs of limb-shedding
- height reduction (%) to overall crown to reduce the lever-arm and load to a weakened base or trunk.
- restoring the crown of a lapsed pollard by reducing the crown height (typically to defined level above original pollard point (bolling) and never right down to original pollard height
- severing ivy (to a specified height) to increase light to areas of the trunk or crown, to encourage internal crown growth in trees showing signs of vitality decline

NOTES ON RETRENCHMENT PRUNING GUIDANCE

Assessment of suitability of specification

When assessing trees for their suitability for restoration (retrenchment) pruning, intervention will be determined by consideration of the current vitality and crown stability of the tree. The proposed pruning levels to be adopted may need to estimate a range of factors including the period before which intervention should take place (treatment priority) and the percentage reduction in the first operation (intervention stage). In addition the process may consider the ultimate desired crown height or spread (final crown size), the overall length of time to achieve the proposed modified crown (duration), the number of cycles and return period between re-inspections and subsequent operations (phasing) and pruning levels (percentages). These considerations combined form the basis of an Individual Tree Management Plan (ITMP) for the management of retrenchment pruning for the tree in question. (See Fig 1 below).

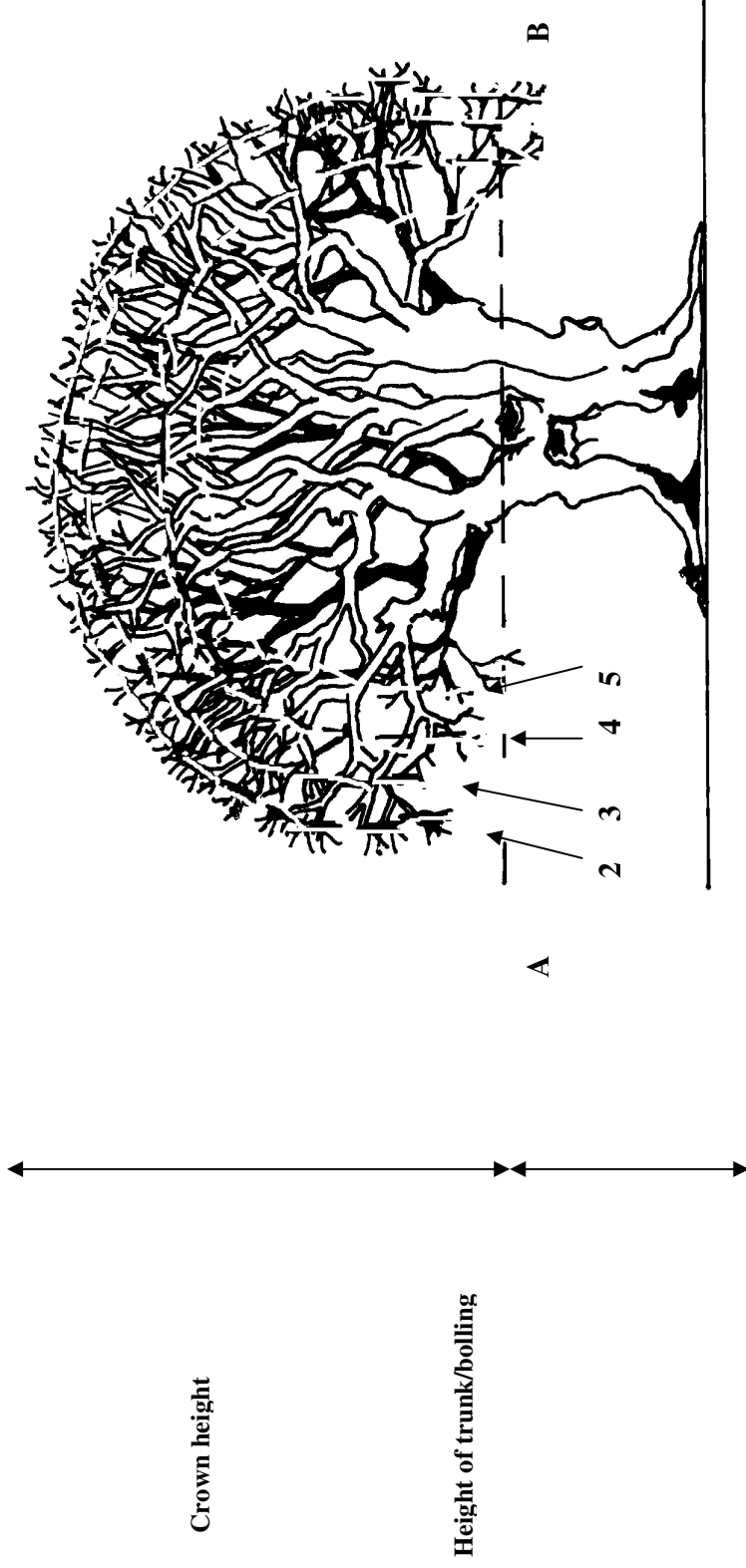
Formulating an Individual Tree management Plans (ITMP)

The first stage of a phased operation will necessarily be in response to an assessment of the trees *current* condition. This will often be a more finely tuned rejuvenation treatment of *known* extent (usually targeted to the extreme crown periphery). Later phases of reduction are *predictive*. Therefore is it possible to distinguish between percentage reductions that refer to the first operation (i.e. 'intervention stage') and subsequent phases ('return phases') of the ITMP?

Principles of implementing the ITMP works

It is also worth pointing out that, as the ITMP may extend for two to three decades it may need modification during the life of the Plan. Good practice should then require that return operations be based on re-inspections prior to implementation of the appropriate phase, and should take account of the tree's condition at that time, noting local changes to the tree's growth circumstances and its response to the previous operation. The ITMP might therefore be subject to redrafting based on these considerations. (A valuable by-product of this process is that the ITMP forms the basis for a long-term record of the tree's response to management and provides the potential for accumulating longitudinal tree data).

Guidance Example for Retrenchment Pruning based on Individual Tree Management Plan (ITMP)



Neville Fay (2004) *Treework Environmental Practice*
FIG 1

Ratio of trunk/boll to crown height	Total number of years to carry out reduction	Number of stages to carry out phased reduction	Period between stages (years)
4:1	30	6	6
3:1	20	5	5
2:1	16	5	4
1:1	12	4	4
Example for tree with trunk/crown ratio 1:3			
Stage 1:	Typically involves <10% reduction targeted to end-growth (degree will depend on current vitality)		
Stage 2, 3 & 4	Five years apart preceded by reinspection & moderated in response to vitality indications		
Stage 5	Preceded by reinspection & carried out to achieve target height (Five years after stage 4)		

