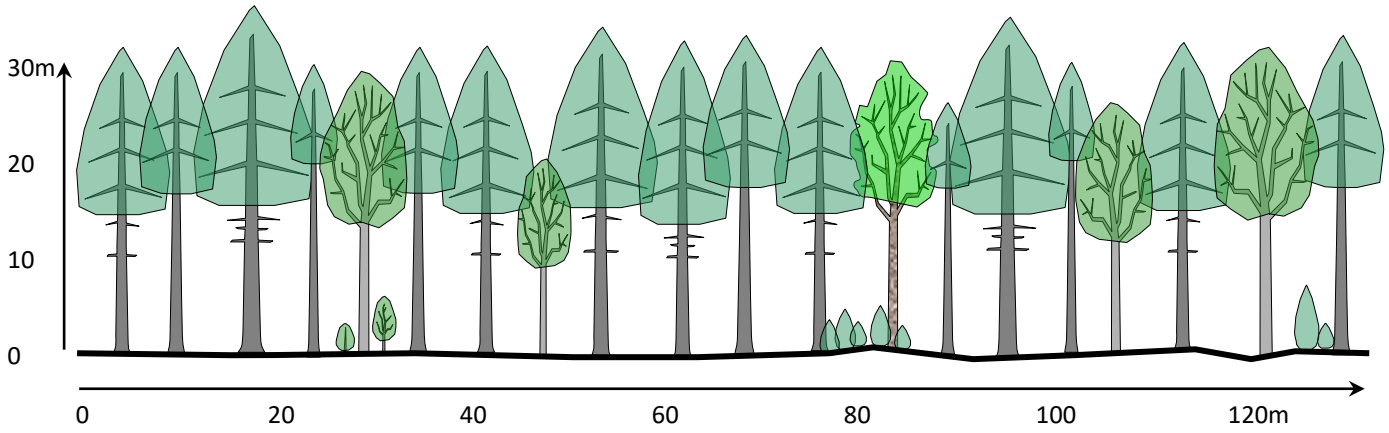
FDT 1.1.6 SS and BE

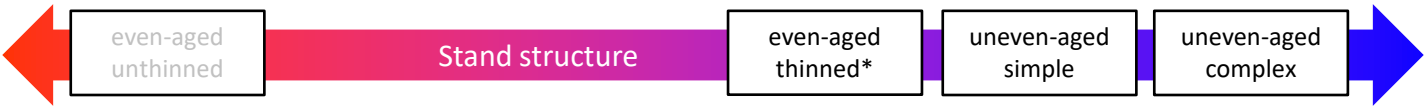


1. Structure and dynamics:

Mixed stands of dominating SS interspersed with BE, which may be single storied or develop into a complex structure. Species may be mixed intimately or in small groups. Minor species of category A.

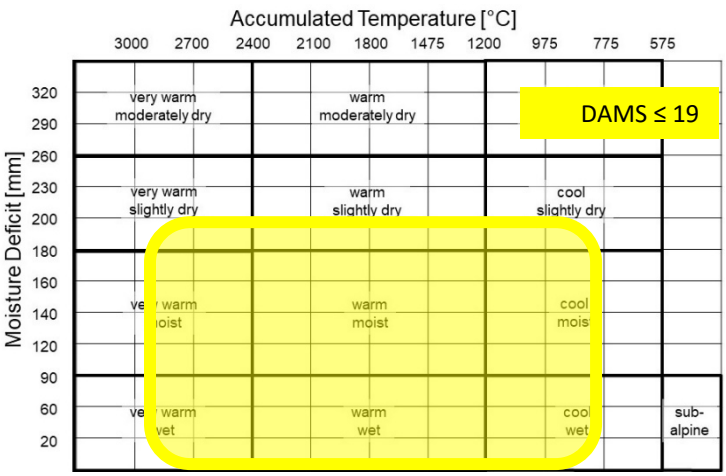
Species distribution: SS 70 – 90% BE 10 – 30% minor species: < 10%

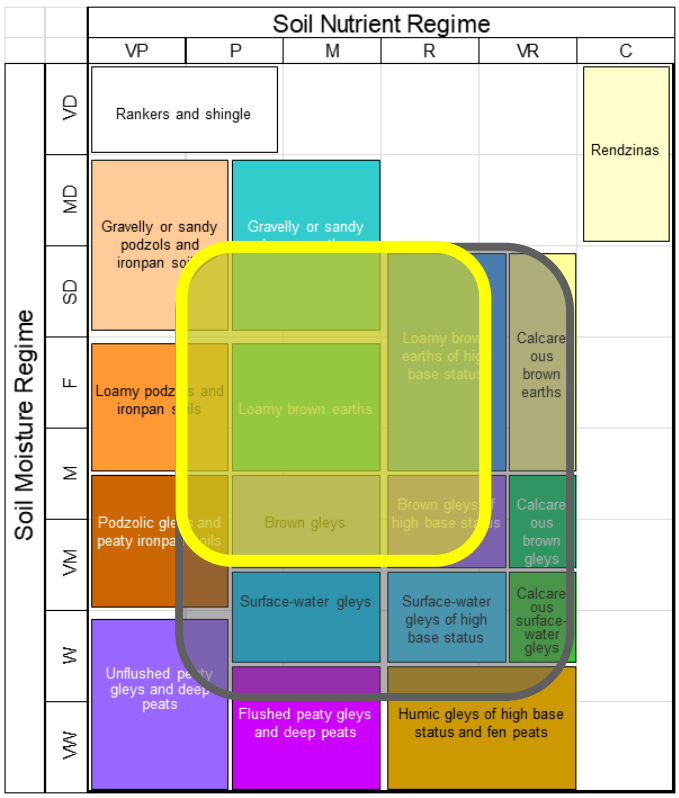
Management is likely to be by LIMA / CCF, with BE adding to diversity, stand stability and facilitating favourable conditions for natural regeneration.



2. Ecological suitability:

BE component represents parts of NVC type W15, also provides niches for elements of W11, W17, W10 and W16. Appropriate on freely draining sites of medium fertility with loamy soil texture where SS achieves GYC > 12.





3. Management objectives:

Economic: SS – sawlogs, target DBH > 40cm in 60 – 100yrs
BE – optional

Environmental and social: Inclusion of BE element improves soil quality compared to a pure SS stand and increases biodiversity value and stand stability. The mixed-species and potentially diverse age structure of the stand is likely to be attractive (autumn and spring aspect) and popular for amenity and recreation.

4. General management principles for the FDT

The role of BE in this FDT is mainly for environmental and social benefits, however economic opportunities arising from biomass / timber production should be used wherever possible. Both species are generally compatible (CS = 2); the faster growth rate and taller final height of SS are compensated by the higher shade tolerance of BE. Most stands are therefore likely to develop two distinct canopy layers over time. Management of young stands must aim to develop vigour (BE) and stability (SS) of individual trees. Stands originating from dense natural regeneration are likely to require respacing in order to steer species composition and develop good tree stability. Both species will respond well to thinning throughout their lifetime but in order to maintain good tree stability of SS thinning must not be unduly delayed. Thinning of SS should start at around 10 – 12m top height, generally as crown thinning. Thinning of BE should aim to produce vigorous and stable trees, some of which may be kept beyond SS rotation for their environmental benefits. LIMA / CCF methods should be the preferable option for final harvesting / restocking on sites conducive to natural regeneration.

5. Timeline

stage	H_{100} [m]	intervention
Establishment		• Planting of 2000 – 3000 trees/ha or natural regeneration. • BE should be planted in small groups (< 0.03ha) if sawlog production is envisaged, otherwise mixed in individually or in rows.
Young stand	< 3	• Protection against animals / plants as necessary. • Respacing of SS if N > 3000 trees/ha at 1 – 2m tree height. Reduce N to 1500 – 2500 trees/ha; in areas of difficult access, along exposed edges and on sites of high wind damage risk reduce N to 800 – 1000 trees/ha. • Clearing of any damage caused by felling / extraction of overstorey trees. • Regulation of species composition and minor species as required.
Thicket stage	3 – 10	• Generally no interventions, except for: • Negative selective respacing of dense BE regeneration (wolf trees). • Release 300 – 400 SS FC tree candidates/ha in areas of difficult access or high wind hazard if respacing in the previous stage has been missed.
Pole stage	10 – 12	• First selective thinning (crown thinning), mainly removing dominant / co-dominant trees with visible defects, coarse branching or poor shape. • Selection of 150 – 250 FC trees/ha (SS + BE).
Pole to small timber stage	12 – 20	• Continue crown thinning at height growth intervals of 3m. • Thinning in groups of BE suitable for timber production should only start when FC trees have developed a sufficiently long clean bole. • Focus on competition status of FC trees and maintain target species composition.
Timber stage		• Monitor species composition, stand density, stability and health, and thin accordingly. Apply crown thinning as long as necessary for the benefits of FC trees, otherwise thinning type may gradually change to low. • Plan for final harvesting when FC trees approach target DBH. • Assess potential for natural regeneration and consider LIMA / CCF options.
Final harvesting and regeneration stage		• Carry out harvesting / restocking operations according to agreed method. • Retain a proportion of stable BE beyond SS rotation as seed trees and for vegetation control. • Use natural regeneration where practical, otherwise restock by planting.