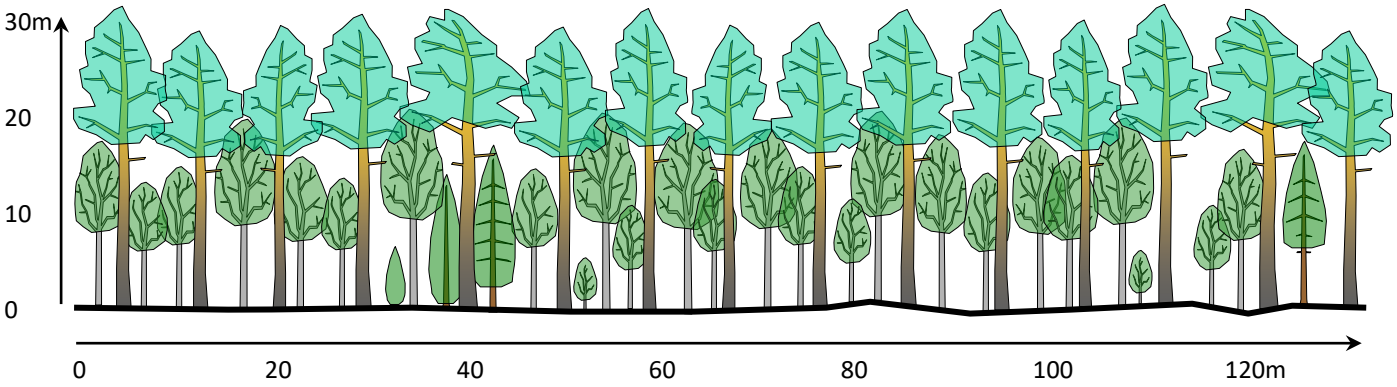
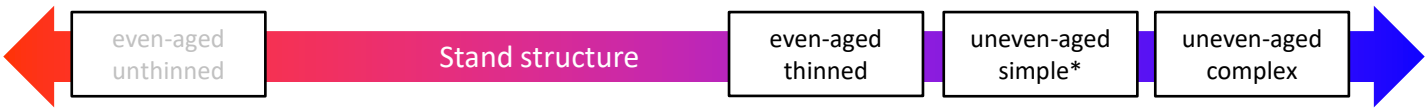
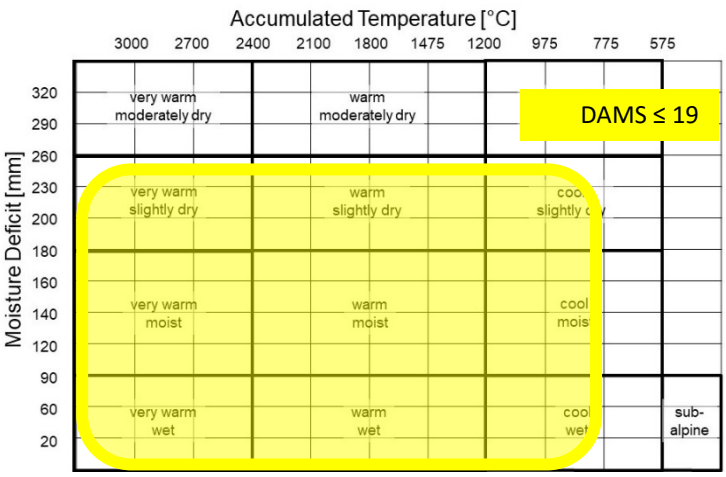
FDT 2.1.6 SP and BE

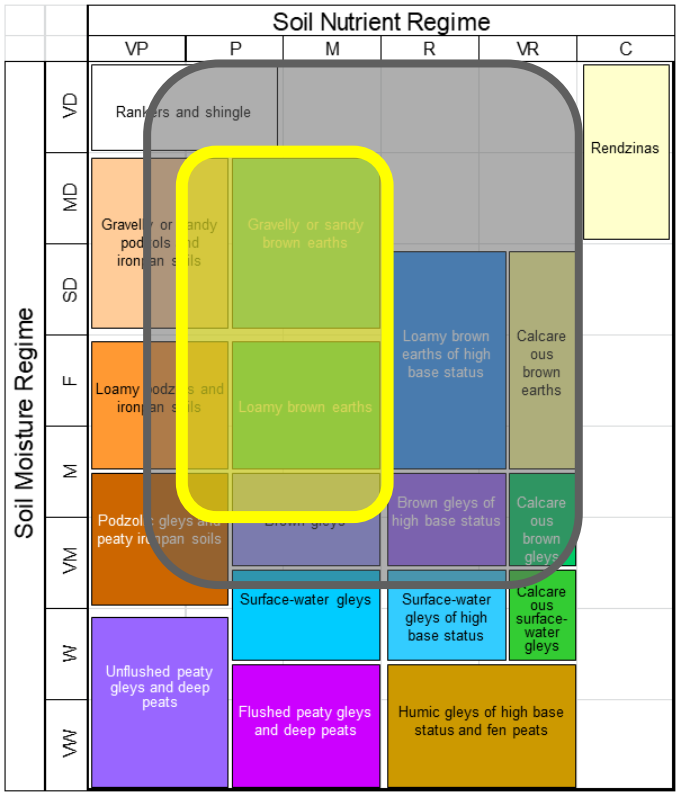


1. Structure and dynamics:
Two-storeyed stand of SP overstorey and BE understorey, with minor species of category B. The horizontal structure may range from intimately mixed to patches.
Species distribution: SP 60 – 80% BE: 20 – 40% minor species: < 10%
Likely to originate from SP underplanted with BE. This concept could be repeated as clearfell-and-restock scenario but alternatively both species may be managed under LIMA / CCF leading to a complex structure. Natural regeneration should be used wherever possible although in most cases SP will have to be planted.



2. Ecological suitability:
Represents the overlap between NVC types W18 and W15 in the upland and lowland climate zones. This FDT should be considered on soils with sandy loam texture and poor to medium nutrient supply where SP performs well (GYC > 8) but may struggle to regenerate.





3. Management objectives:
Economic (SP GYC > 8): SP – sawlogs, target DBH > 50cm in 100 – 140yrs
BE – optional, sawlogs, target DBH > 50cm in 60 – 120yrs
Environmental and social: Woodland of natural appearance, presence of veteran trees and deadwood. BE component acts as soil improver, controls ground vegetation and thus facilitates natural regeneration of SP, also adds diversity and attractive spring and autumn aspect, thus improving the recreation and amenity value.

4. General management principles for the FDT

This FDT is designed for productive SP stands on better sites than FDT 2.1.2 where SP is less likely to regenerate naturally. The role of BE is to add productivity and structural diversity whilst controlling ground vegetation. SP should be established and managed similar to FDT 2.1.2. BE will be established after the early thinning phase in SP, most likely by underplanting, leading to a distinct two-storey stand structure. Species compatibility is therefore irrelevant but careful timing of BE establishment is important to prevent the understorey from growing into the SP canopy too soon. The BE understorey will eventually catch up with SP in height growth; at this point the FDT needs to be reviewed. Further management will depend on the decision of continuing with a SP dominated FDT or switching to BE; in either case LIMA / CCF methods should be the preferable option for final harvesting / restocking.

5. Timeline

stage	H_{100} [m]	intervention
Establishment		• Planting of 3000 – 8000 trees/ha or natural regeneration.
Young stand	< 3	• Protection against animals / plants as necessary. • Negative selective respacing (removal of wolf tree candidates). • Respacing if N > 8000 trees/ha (or lower if tree stability is a concern) at 1 – 2m tree height. • Clearing of any damage caused by felling / extraction of overstorey trees. • Promotion of minor species as required.
Thicket stage	3 – 10	• Generally no interventions, except for: • Negative selective respacing and careful promotion of 300 – 400 FC tree candidates/ha if respacing in the previous stage has been missed.
Pole stage	10 – 14	• First selective crown thinning, mainly removing dominant / co-dominant trees with visible defects, coarse branching or poor shape. • Selection of 150 – 250 FC trees/ha. • Pruning of some FC trees may be considered.
Pole to small timber stage	14 – 20	• Continue crown thinning at height growth intervals of 3m, focussing on competition status of FC trees.
Timber stage		• Monitor stand density, stability and health, and thin accordingly. Apply crown thinning as long as necessary for the benefits of FC trees. Reduce thinning intensity and / or lengthen thinning cycles as SP becomes less responsive to thinning. • Establish BE, by natural regeneration or underplanting. Stocking density may be slightly lower than in open ground scenarios. • Respace and thin BE according to guidance in FDT 6.1.1 / 6.1.2. • Review FDT and plan for final harvesting when BE start growing into SP canopy and SP FC trees approach target DBH. • Decide on LIMA / CCF methods to be used and assess potential for natural regeneration – improve conditions if necessary.
Final harvesting and regeneration stage		• Carry out harvesting / restocking operations according to agreed method. • Monitor light level, ground vegetation, occurrence and growth rate of regeneration, supplement by planting if necessary, or restock.