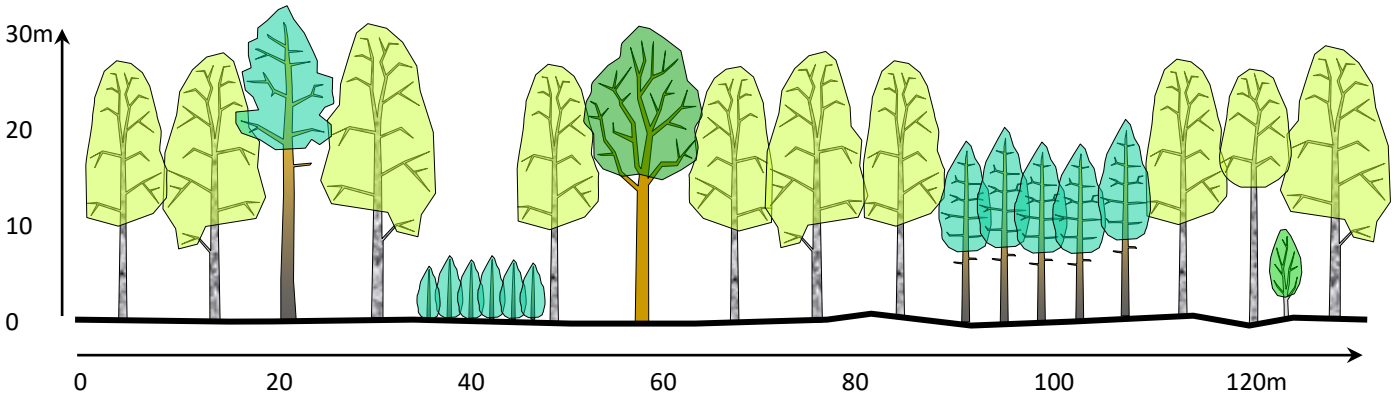
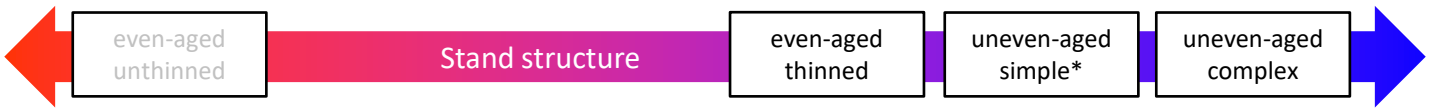
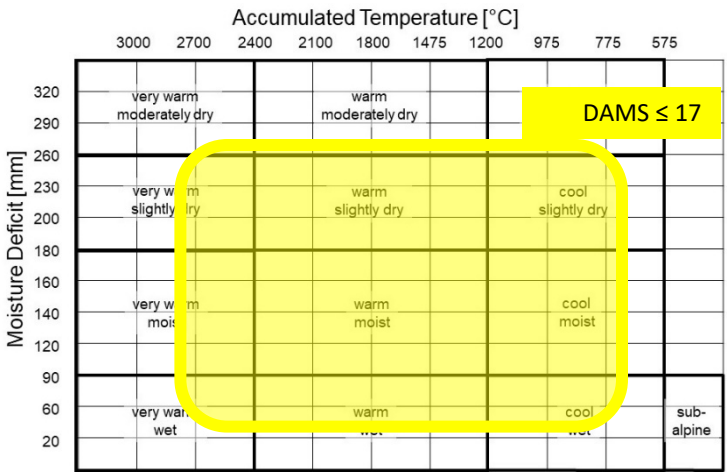
FDT 7.2.1 SBI and SP

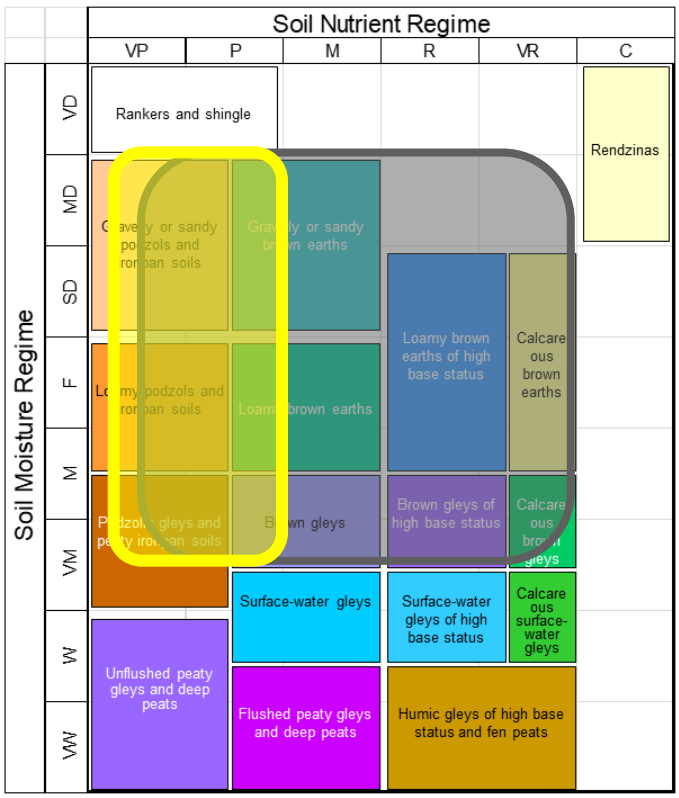


1. Structure and dynamics:
Mosaic of single-storeyed SBI intermingled with individual trees to small areas of SP of variable age and category C minor species, particularly OK.
Species distribution: SBI 60 – 90% SP: 10 – 40% minor species: < 20%
SBI and SP will be managed using LIMA with single species cohorts on different rotations. SP and OK may be planted if regeneration is insufficient; BI and minor species should propagate via natural regeneration.



2. Ecological suitability:
Contains important elements of NVC types W4, W18 and W17 or W16 in the upland and lowland climate zone. This FDT belongs on nutrient poor soils with sandy to sandy loam texture and low to intermediate water supply.





3. Management objectives:

Economic:	SBI – sawlogs, target DBH > 30cm in 60 – 80yrs (optional) SP – sawlogs, target DBH > 40cm in 100 – 140yrs
Environmental and social:	These stands can be very important for habitat quality and, in conifer dominated landscapes in the uplands, help to improve soil fertility as well as increase forest and landscape scale diversity. Attractive forests due to open character and autumn colours.

4. General management principles for the FDT

This FDT is for productive SBI / SP stands on low fertility sites where structural and species diversity is desirable and both species show good potential to regenerate naturally (comparable to FDT 2.1.7 but with inverse species proportions). As pioneer species SBI and SP are quite compatible (CS = 2) to grow in mixtures, with growth rates peaking early in life and diminishing rapidly thereafter. Due to its growth pattern and relatively short life expectancy the Q/D approach is not applicable to SBI. If SBI is to be grown to sawlog dimensions respacing and thinning must ensure that the relative length of the live crown never drops below 60% of tree height. Timber quality in SP is more variable than in other conifers; therefore high initial density is desirable to provide scope for quality selection during respacing and thinning. Thinning should start at around 10 – 14m top height, generally as crown thinning, and focus on pole and small timber stage. Thinning at later stages must aim to maintain steady growth and tree stability. BI will likely be managed on a shorter rotation than SP; LIMA / CCF methods should be used to introduce and maintain the desired horizontal and vertical stand structure.

5. Timeline

stage	H_{100} [m]	intervention
Establishment		• SBI: Planting of 2000 – 3000 trees/ha or natural regeneration. • SP: Planting of 3000 – 8000 trees/ha or natural regeneration.
Young stand	< 3	• Protection against animals / plants as necessary. • SBI: Systematic respacing to 1500 – 2500 trees/ha (800 – 1200 trees/ha in areas of difficult access) if N > 3000 trees/ha at 1 – 2m tree height. • SP: Negative selective respacing (removal of wolf tree candidates). • Clearing of any damage caused by felling / extraction of overstorey trees. • Regulation of species composition and minor species as required.
Thicket stage	4 – 10	• Generally no interventions, except for: • Systematic (SBI) / negative selective (SP) respacing and careful promotion of 400 – 600 FC tree candidates/ha if respacing in the previous stage has been missed.
Pole stage	10 – 14	• Selection of 200 – 300 FC trees/ha (SBI + SP), consider pruning of high quality individuals on most productive sites. • First selective crown thinning, mainly removing dominant / co-dominant trees with visible defects, coarse branching or poor shape. Thinning should achieve gaps of > 1m around crowns of SBI FC trees.
Pole to small timber stage	14 – 20	• Focus on competition status of FC trees – repeat crown thinning when canopy gaps close. Monitor competition between SBI and SP and adjust thinning to 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. Reduce thinning intensity and / or lengthen thinning cycles as SBI / SP become less responsive to thinning. • Plan for final harvesting when 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. • Follow species specific guidance for SBI / SP dominated components. • Monitor light level, ground vegetation conditions, occurrence and growth rate of regeneration, supplement by planting if necessary, or restock.