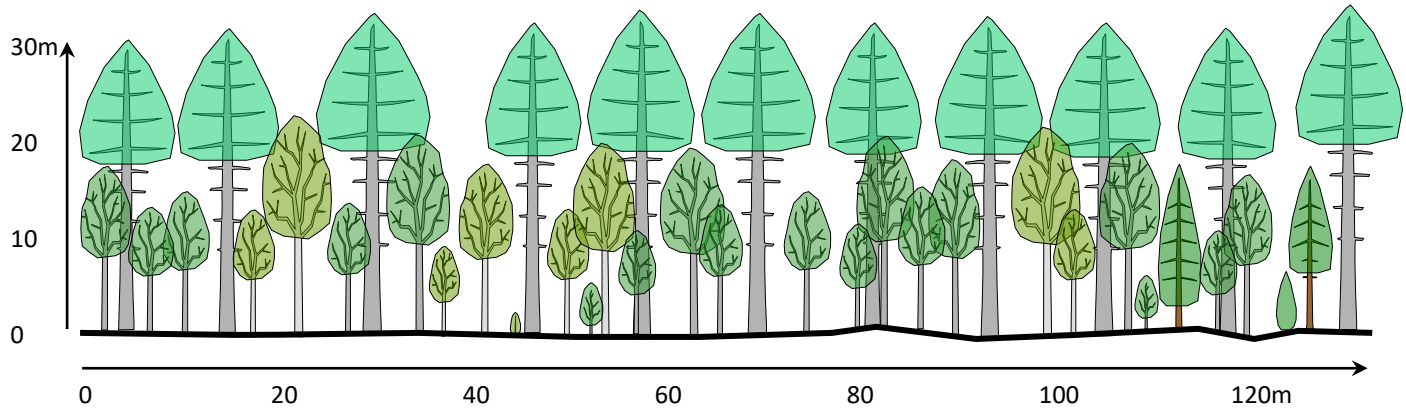
FDT 2.2.3 CP and long-lived broadleaves (XBLL)

Forest Research

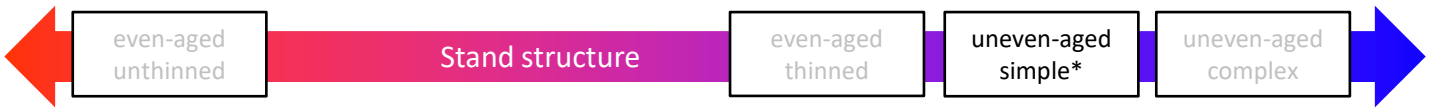


1. Structure and dynamics:

Stands with CP overstorey and XBLL understorey, but likely to become more structurally diverse over time. XBLL options include BE, OK, SY, SC, AH and others; minor species of category A.

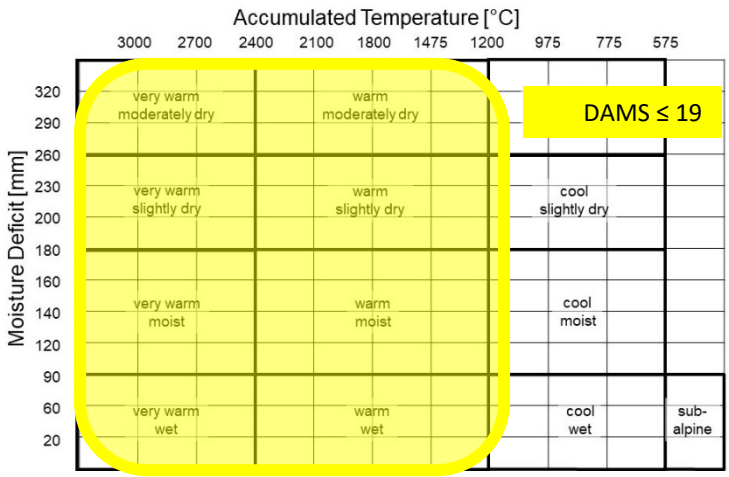
Species distribution: CP 30 – 70% XBLL 30 – 70% minor species: < 10%

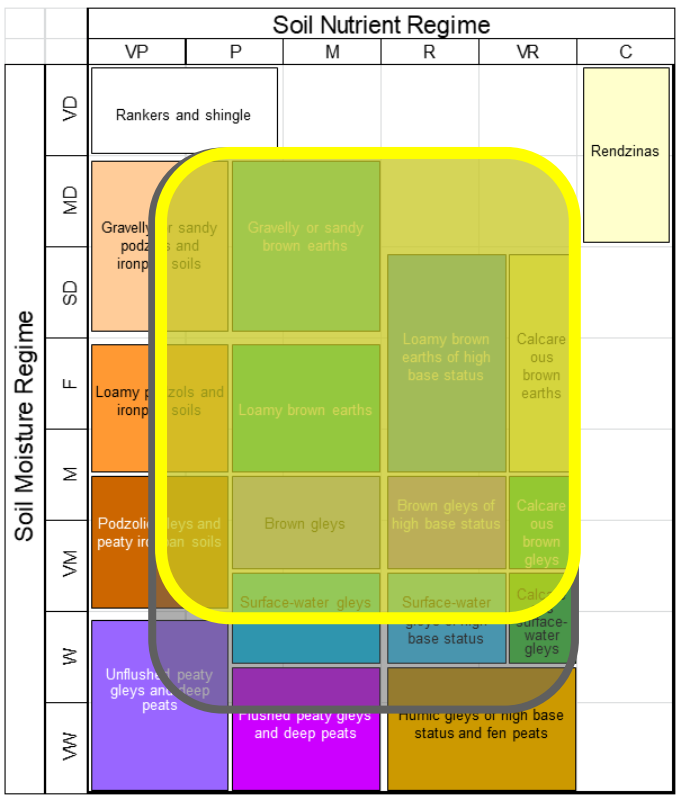
Stands will likely be the result of underplanting under CP and represent a transition stage towards a different FDT. Often several XBLL species will be present and include emerging species; in these cases management objectives and future FDT will have to be reviewed and retain some flexibility.



2. Ecological suitability:

Represents no NVC type but is likely to contain elements of most lowland types. Appropriate for CP stands at risk of becoming infected with DNB and where XBLL are introduced pre-emptively to increase resilience. Choice of XBLL must be driven by site conditions and will result in different options for acidic and more calcareous sites.





3. Management objectives:

Economic:	CP – sawlogs, target DBH > 50cm in 60 – 100yrs XBLL – sawlogs / pulp / chip
Environmental and social:	Transition from CP to other FDTs avoiding the negative impacts of clearfelling and restocking. XBLL elements are likely to improve soil fertility and increase the conservation value of the stand, particularly if native species are used.

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4. General management principles for the FDT

This FDT is designed to facilitate the transition from CP stands affected by DNB to XBLL without the need for clearfelling. It also provides an option to introduce XBLL species requiring sheltered growth conditions during their establishment phase. Species compatibility is not applicable to this FDT. Management must seek to maximise the benefits from the CP overstorey whilst developing the XBLL understorey into a successor stand. Thinning of CP must aim to maintain tree health and steady growth as well as possible, whilst creating suitable conditions for the establishment and growth of the XBLL understorey. XBLL will usually be introduced by underplanting but some natural regeneration may be present. Underplanting may occur at variable ages but usually after sanitary thinnings in CP, leading to a distinct two-storey stand structure. Underplanting design must anticipate harvesting operations in order to avoid undue felling / extraction damage as thinning of CP continues alongside respacing and thinning of XBLL. If several XBLL species are introduced some thought should be given to their respective roles (*i.e.* primary / secondary species, timber quality) in the future stand. Eventually XBLL will encroach into CP canopy; at this point CP may be removed and the FDT must be reviewed.

5. Timeline

Please note that interventions up to Pole stage are usually not applicable to this FDT and have therefore been greyed out.

stage	H_{100} [m]	intervention
Establishment		• Planting of 2000 – 3000 trees/ha or natural regeneration.
Young stand	< 3	• Protection against animals / plants as necessary.
Thicket stage	3 – 10	• Generally no interventions, except for: • Systematic respacing if improved airflow is required by presence of DNB.
Pole stage	10 – 12	• First selective thinning (sanitary thinning), mainly removing trees with poor health status and opening canopy to increase air flow.
Pole to small timber stage	12 – 20	• Monitor health status of CP and continue thinning accordingly, at height growth intervals of 2 – 3m. Tree selection according to health status. • Establish XBLL, usually by underplanting but taking advantage of any suitable natural regeneration present. • Open CP overstorey either continuously by removing individual rows or in strips by removing several adjacent rows, according to the specific light demand of XBLL species. • Consider compatibility and role in future stand when underplanting with several XBLL species. Although compatible species (CS = 1) may be established as intimate mixtures, for reasons of timber quality it is generally preferable to establish all XBLL in robust groups. Use relevant XBLL FDTs for guidance on species proportions.
Timber stage		• Monitor health status, stand density and stability of CP as well as light requirements of XBLL understorey, and thin accordingly. • Respace and thin XBLL according to species specific guidance. • Review FDT and plan for final harvesting of CP when XBLL start growing into CP canopy and CP approaches target DBH.
Final harvesting and transition stage		• Carry out harvesting operations of CP according to agreed method. • Assess situation and decide on further management of XBLL, following species specific guidance.