

DESIGN PRINCIPLES FOR WOODLAND FOR WATER

Priority Locations for Woodland Creation within Target Catchments	Objectives and Design Principles	Countryside Stewardship Planting Requirements
WIDER CATCHMENT WOODLAND		
<p>WHERE? Planting will generally be located:</p> <ul style="list-style-type: none"> • within groundwater and surface water Protection Zones; • on soils at high risk of erosion or leaching chemical pollutants; • where temporary surface water collects and flows during heavy rain; • on areas receiving runoff from hard standings, on infiltration basins and on sustainable rural and urban drainage systems; and • downslope of erosion or chemical pollutant sources. 	<p>WHY? Planting here can help reduce fertiliser and pesticide usage; protect sensitive soils from disturbance and erosion; increase infiltration and reduce water runoff; and intercept sediment and chemical pollutants in runoff, reducing the delivery of pollutants to watercourses.</p> <p>HOW? For maximum benefit, your planting should:</p> <ul style="list-style-type: none"> • target pollutant sources and retention zones; • run parallel to the land contour where the woodland is designed to intercept pollutants draining from upslope areas; and • have the highest planting densities along runoff pathways; • include an open space edge located to enhance the trapping of fine sediment where overland flow is an issue. 	<p>STOCKING DENSITY 1600 sph, average 2.5m spacing, though closer spacing across runoff pathways</p> <p>OPEN SPACE Maximum 20% of the area where fully justified, but preferably less</p> <p>SPECIES Productive broadleaf or conifer species will provide the greatest benefits for water. Avoid larger scale planting of conifers where water resources are an issue.</p>
RIPARIAN WOODLAND		
<p>WHERE? Planting will generally be:</p> <ul style="list-style-type: none"> • next to and within 30 m either side of watercourses; • targeted towards stretches of watercourse at risk of receiving sediment, nutrient pollutants or pesticide spray from adjacent land; • along reaches of watercourse vulnerable to bank erosion; and • along watercourses lacking shade and where fish are thought to be at risk from thermal stress. <p>Where appropriate and practicable, include the construction of large woody debris dams within the watercourse to improve channel structure and aid re-wetting of the riparian zone</p>	<p>WHY? Planting along watercourses can act as a buffer between rivers and the adjacent land, intercepting and removing nutrient pollutants and sediment in runoff; providing a barrier to pesticide spray drift; protecting river banks from disturbance and erosion; increasing hydraulic roughness and slowing flood flows; and providing shade to reduce thermal stress to fish and other aquatic life.</p> <p>HOW? For maximum benefit your planting will:</p> <ul style="list-style-type: none"> • provide continuous canopy cover along the length of the riparian zone, but allowing for light/dappled shade alongside the watercourse itself; • include open space along the outer edge of the new planting to enhance the trapping of fine sediment where overland flow from adjacent land is an issue; • be at its widest and densest where overland flow discharges from the adjacent land, and extend to include areas of active erosion and unstable slopes where possible; and • extend right up to the edge of the watercourse where bank erosion is an issue. 	<p>STOCKING DENSITY 1600 sph, average 2.5m spacing, though closer spacing in the floodplain and where overland flow discharges from the adjacent land</p> <p>OPEN SPACE Maximum 20% of the area, though preferably less, and located primarily along the outer edge of the new woodland and on key areas of open habitat such as wetland flushes.</p> <p>SPECIES Predominantly native broadleaves, but productive broadleaves and some conifers may be acceptable away from the watercourse.</p>

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FLOODPLAIN WOODLAND		
<p>WHERE? Where possible, planting will generally occupy a significant part of the width of one or preferably both sides of the floodplain.</p> <p>Planting should avoid areas:</p> <ul style="list-style-type: none"> • where flood flows are controlled/back-up by existing restrictions such as bridges and culverts, particularly where these are vulnerable to blockage; • alongside stretches of main river with engineered flood defence banks; • where the backing-up of floodwaters could threaten local properties; and • within 'washlands'. 	<p>WHY? Planting here can increase hydraulic roughness which helps to slow flood flows and encourages the deposition of sediment and the retention of pollutants on the floodplain.</p> <p>HOW? For maximum benefit, your planting will:</p> <ul style="list-style-type: none"> • involve random spacing but, if in rows, the rows will be offset and aligned perpendicular to the flow of water in order to slow the flow; • reduce to 1.0 m spacing across the lowest lying/wettest parts of the floodplain and along the downstream edge of the planting to increase low level roughness and temporary flood storage; and • have open space that will be concentrated along channels, backwater pools and outer edges. 	<p>STOCKING DENSITY 2250 stems per hectare, average 2.1m spacing, though closer (down to 1.0m) on the lower lying parts of the floodplain and along downstream edge</p> <p>OPEN SPACE Maximum of 20% of the area, but preferably less than this.</p> <p>SPECIES Predominantly native broadleaves adjacent to watercourses and on lowest lying/wettest areas. Productive broadleaves and some conifers elsewhere, especially on higher/drier parts of the site.</p>