

Points to consider when planting for soil conservation, and riparian planting in the King Country

Choose your planting site - identify areas where runoff and erosion occur most frequently – which may include eroding banks, seeps, springs, gullies, boggy areas so that you can create the right setbacks and choose the right type of plant for the conditions.

For riparian areas establish low flow and high flow zones - set your plantings and fences back as far as possible to be out of flood zone – plants like grasses/sedges/flax can tolerate wet feet - most plants do not.

Sites with bank erosion - keep shade levels between 50-70 % to avoid grasses and sedges being shaded out - they are good for bank stabilisation. Avoid large flaxes.

Dry clay soils - Manuka and Mountain Flax or Karamu under Mahoe.

Lower bank zone or wetter conditions; Pukio and Swamp sedge (Carex), Cabbage trees, Toe Toe, (Harakeke good for swampy ground conditions but avoid planting too close to stream banks or electric fences – allow at least 2m). Most plants listed above will tolerate upper banks or dry areas too.

Important to retain grassy strip of 1-2 m between riparian planting and fence for filtering overland flow of E coli, phosphorus and sediment and to also prevent shorting electric wires or being grazed. Avoid planting large trees within 5 m (preferably 10 m of the stream bank).

Swapping Crack Willow for Matsudana willows is generally a good idea where possible however all large trees require maintenance to keep size under control.

Whether you grow your own or buy from local nurseries - **Choosing the right plants for your planting site is very important**:- (use <https://waikatoregion.govt.nz/assets/WRC/WRC-2019/6519-Plant-ID-Booklet.pdf> for plant selection and suitability for your planting site) - consider what type of planting sites you have i.e. wide/narrow and boggy or dry banks. It's a personal preference whether you choose to restrict your planting selection to a small number (5-6) of Primary colonisers (trees/shrubs that get established and grow quickly forming a nursery type environment e.g. Cabbage tree (good for absorbing nutrients & chemical residues), Harakeke/flax, Toe toe, Karamu, Coprosma or Manuka/Kanuka), or choose a wider selection adding Koromiko, Tarata, Mahoe, Putaputaweta, Kohuhu, Ribbonwood (good root systems) to increase biodiversity and survivability. This nursery environment protects slower growing long lived (secondary) trees such as Rimu, Totoro, Kahikatea, Miro and Kauri from wind/frost and ensures straight growing. These trees may offer carbon sequestration opportunities for carbon credits.

Tree lucerne is a quick growing shelter tree which attracts birds. Red Alder can be used as shelter break and firewood. Pittosporum Colenso- Black Mapou is hardy and can handle all soils and conditions.

Manuka V Kanuka: Manuka has a harsher leaf - 'mean' and scrubbier looking with larger seed capsules with longer seed holding capability. Kanuka has a more rounded leaf - 'kind' - more tree-like taller habit with seed at top of tree in January.

Site Preparation:

Clear site of serious weeds; gorse, blackberry, convulvulus - long grass can be okay depending on site prep - it may protect plant from wind frost and drought. Minimise soil disturbance as much as possible.

Consider if spot spray is needed or not depending on size of plants. Make sure plants are hardened off before planting out (ask your supplier) and well-watered in bags (dunk in a trough and wait till bubbles disappear). Bamboo stake (can dip tips in white paint or use old fence standards) to find plants later in long grass and especially good to train Kahikatea, Totoro and Kauri upright.

When cutting up flax to plant - chop up to 50% of piece leaving growing tip and longer mature piece.

Planting:

The hole should always be larger than the plant container or root ball - loosen the soil on the sides and in the bottom of the hole to allow the plant's roots to penetrate the soil more easily. Carefully removing the plant from its pot/root trainer to retain as much soil around the roots as possible. Make sure to bury plant at correct depth - same level as in pot with adjacent soil and firm well with hands/boot.

Post planting:

Could use mulch (silage, wool, carpet but avoid placing right up to stem) or stomp long grass to maintain long grass couple of times a year till well established. Spray around plants **very** carefully if serious weed issue - although not recommended.

Pests: Need to monitor and implement regular shooting or trapping programme as appropriate.

Pukeko like to pull out flaxes - could use triangle protectors or angle plant slightly to make it harder to pull out
Hares - real problem areas use older taller specimens or stake with bamboo.

Flaxes provide breeding ground for rats. Shelter belts/riparian areas also breeding ground for opossums & rats requiring pest management with bait stations/traps at 1 per 100m.

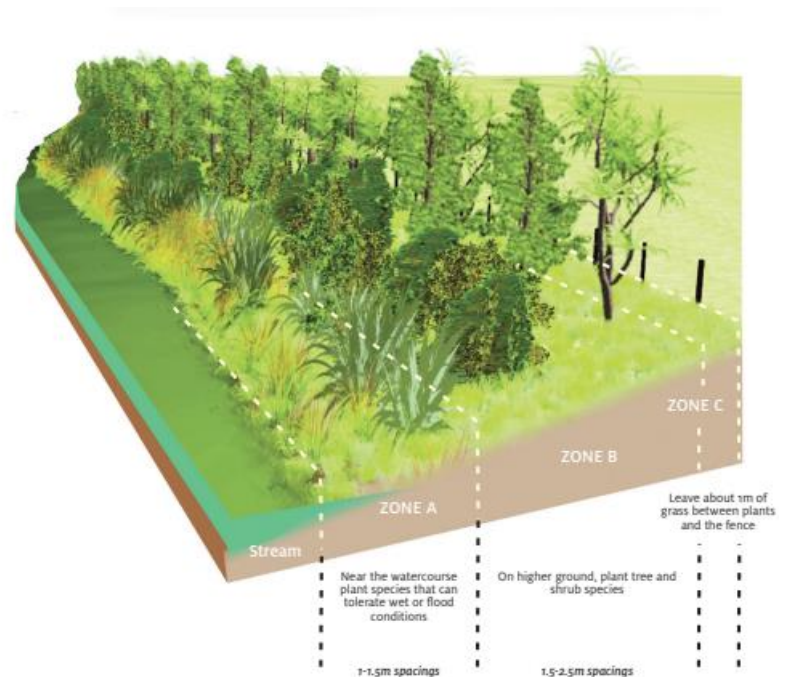
Weeds: Spray for convolvulus, gorse and blackberry with suitable herbicide for conditions.

Poison Crack willow after cutting down by drilling holes and applying herbicide as a basal spray in oil/diesel? Check with WRC.

Planting density; Narrow riparian planting sites without weed issues i.e. if fencing 3-5m from bank edge to provide some stream shade, native habitat and stream stability – a single row alternate planting with spacings of at least 2m (grasses closer) of Carex sp., Cabbage tree, small flax and Manuka are possible options.

If restoration is your top priority with minimum weed control and maintenance and you are prepared to accept some stream bank erosion then dense plantings of 1.5m that provide up to 90% shade for the stream will create conditions close to native forest. This is an expensive option but may work in weed prone areas. Make sure you put your fences well back and plant far enough back from the channel to allow for the erosion that is likely before your trees are well established.

Take care not to over plant - density wise as it will create bare ground through shading and remove filtering effect of long grass. Deciduous trees do allow for grass underneath. Wider shelter belts are better than too narrow - plants esp. flax outgrow them and interfere with fences on a major scale.



Useful resources

<https://toolkit.tanestrees.org.nz/planting-budgeting-calculator/>

<https://landcare.org.nz/resource/planting/>

<https://www.waikatoregion.govt.nz/assets/WRC/WRC-2019/Riparian-Vegetation-Management-Plan.pdf> this has detailed info about planting zones: Grass strips, upper planting and lower planting zones and what to plant where.

<https://waikatoregion.govt.nz/assets/WRC/WRC-2019/6519-Plant-ID-Booklet.pdf>

Link to Google Earth Pro mapping download, where you can draw projects to measure distances/areas

<https://www.google.com/earth/versions/#earth-pro>

Another option is the DairyNZ Riparian Planner <https://www.dairynz.co.nz/environment/waterways/riparian-planner>