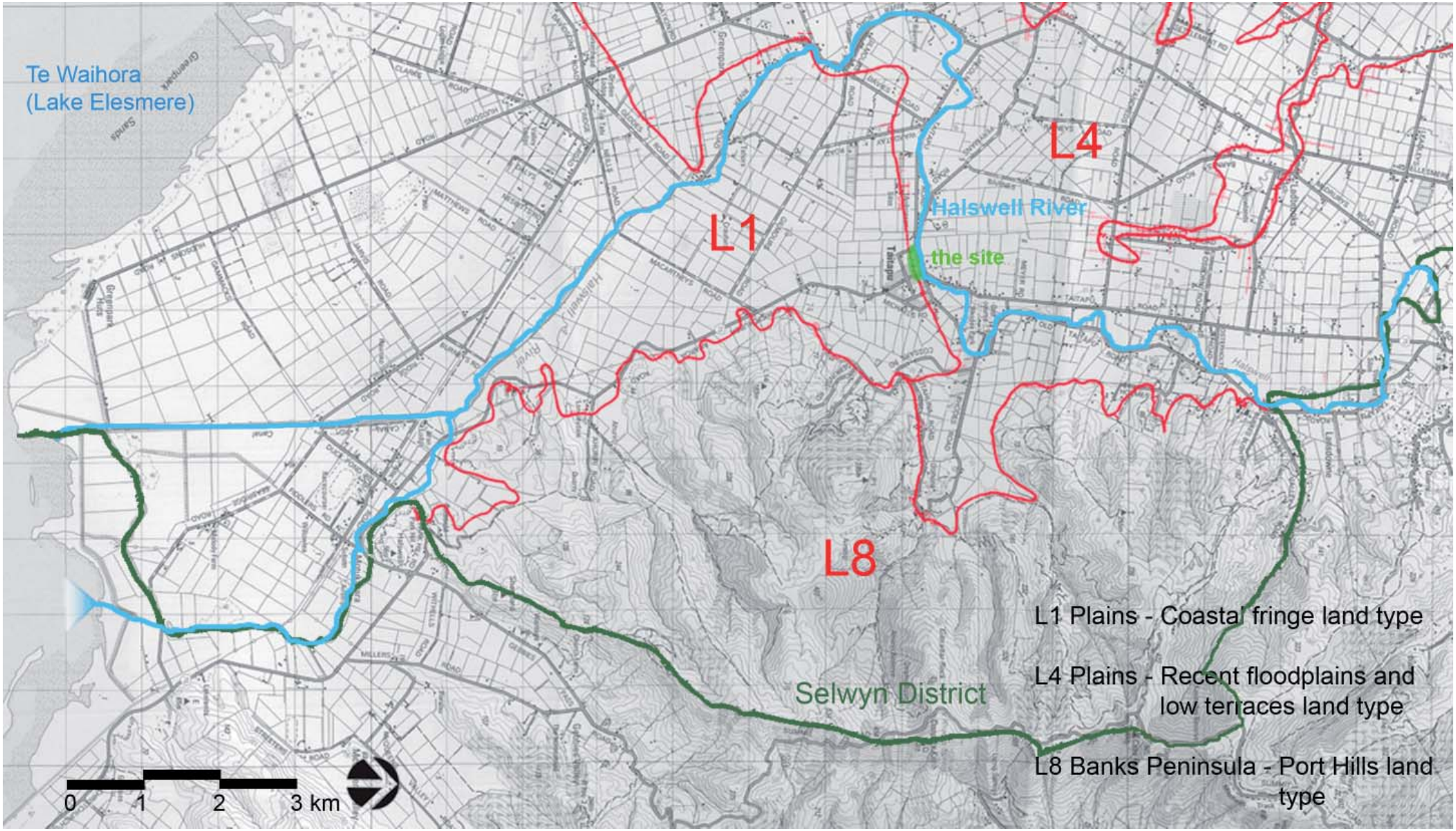
Landscape plan for the

Halswell River through **Tai Tapu** *• west*



Land types of the Halswell catchment
(Lynn, 1993)

landscape plan for the **Halswell River** through **Tai Tapu** ▪ *west*

Lucas Associates

1. Background

The Tai Tapu Ratepayers & Residents Association seeks improved management of the Halswell River through their village. Following discussions with the Ratepayers committee and David Aires (Environment Canterbury river engineer), Rob Blakely of RestoratioNZ was engaged to prepare a preliminary river restoration concept plan. Lucas Associates were then engaged to undertake site meetings, field inspections, discussions with residents' representatives, Te Waihora Trust and Environment Canterbury staff, and to then prepare the landscape plan.

The objective is to prepare a landscape plan for the Halswell River through Tai Tapu, west and downstream of State Highway 75 (stage one), to describe and illustrate the proposed work. It is anticipated that stage two will involve the eastern section, upstream of the highway bridge.

2. The Halswell River

The Tai Tapu village is located primarily around the south bank of the Halswell River where the Christchurch – Akaroa Road, SH75, crosses. This plan addresses the section of river downstream of the highway bridge, through to the smaller bridge, approximately 400m below.

The Halswell River rises from springs around the southwest and suburban fringes of Christchurch City near the Selwyn District boundary around Halswell and Prebbleton, and from up Lansdowne Valley (refer map opposite). It winds south on the floodplain (L4) along the base of the Port Hills (L8). After the last great meander east to Rhodes Road, it swings west above the coastal fringe lands (L1) that begin at Tai Tapu and extend down to Te Waihora (Lake Ellesmere), to swing south again inside Gilmours Road.

In its lower reaches the course of the Halswell has been considerably modified to minimise wetland areas and speed land drainage. Its course to Te Waihora is more akin to a drain than a natural river form.

The Halswell River is a single thread stream[1], originating from springs on the plains as well as from the Port Hills. On the Port Hills the Selwyn boundary follows the watershed to the Halswell.

The Halswell is a small but complex catchment. On the Plains, the Halswell would naturally have a complex meandering form that would have migrated across plains land in response to flood pulses. From European settlement it has been increasingly confined to a particular channel alignment.

The abandoned channels, remnant oxbow formations and wetlands that would have been a natural part of the Halswell River have long been removed for land use activities requiring the separation of useable dry land from the dynamics of the riparian system. A river of the rural plains, the Halswell is a very low altitude stream with extensive associated high production lands. The consequent river management has primarily focussed on confining flows and hastening their passage to the coast. That is, management of the Halswell is primarily for drainage. Ensuring the channel has adequate flood capacity and no impediments to flows have been the primary approach. This work focusses on removal of silt build-up and excess weed growth from within the channel, and bank clearance alongside.

Through Tai Tapu the river is in a well-defined channel flowing east – west. The length of river addressed by this plan is entirely confined by roading infrastructure, with Perymans Road close alongside the north bank and the Lincoln –Tai Tapu Road close along the south. A bridge marks either end.

[1]On the Canterbury Plains there are two stream types, braided streams and single thread streams

3. The Halswell in Tai Tapu

Tai Tapu is the main urban area that fronts the Halswell. Through Tai Tapu, the river has a very naturalistic character, from the natural appearance of the river channel and the highly vegetated banks.

The river adds importantly to the quaint, rural village character of Tai Tapu. It forms the spine and town frontage, with key public and historic buildings such as the old Tai Tapu Library and St Paul's Anglican Church, both built from volcanic Port Hills stone and completed in 1932.

The tree-lined river with grassy banks is an important characteristic contributing to the charm of the village.

LAND STATUS & MANAGEMENT RESPONSIBILITY

The channel and banks of the Halswell River through Tai Tapu is not reserve, but unallocated crown land (UCL). The remaining land is road reserves, under the jurisdiction of Selwyn District Council.

RIVER CORRIDOR MANAGEMENT

The Environment Canterbury (ECan) management regime involves regular water access for weed removal using a boat and weedcutter. Clear channel access is necessary to enable this to occur.

Recognising both wider and local interests, the river corridor through the town is appropriately managed in partnership between the varying interests. It is suggested a Tai Tapu Rivercare Group be established to involve the Ratepayers and Residents Association, Selwyn District Council, Environment Canterbury and Te Waihora Trust.

Dragline access along one bank is required for ECan to remove silt build up in the channel and to deposit the excavated material on the bank for 6 months drying prior to its removal.

An unconstructed low floodplain is needed for flood flows to be accommodated. The river corridor is currently seriously impeded, particularly with large clumps of bamboo.

The Selwyn District Council provides roadside mowing.

This concept plan involves development and management of an open accessway along the south bank for recreational activity. It can also be utilised on occasion for dragline access. A mown route would be maintained, with low riverbank vegetation over which floods and machinery can operate, and tall cover kept back toward the roads to the south and to the north. Low native cover along the river banks will assist bank stability, wildlife habitat and amenity values (refer section drawings).

4. Issues & Opportunities

Management issues have been identified and action is proposed for each:

4.1 Invasive climbers (e.g. ivy and old mans beard) choking trees and inhibiting revegetation opportunities = remove or control by clearing from base of trees and preventing from further climbing. Replant cleared sub-canopy and canopy with appropriate native and exotic species.

4.2 Total and sudden removal of groundcover weeds is a significant task on the northern banks and risks erosion events = staged removal and replanting.

4.3 Existence of invasive tree species spread by bird dispersed seed = remove invasive tree species and replant where appropriate with native plants or non-invasive deciduous hardwoods.

4.4 Existence of diseased, malformed, old trees or overhanging limbs = remove and replace as appropriate.

4.5 Stream bed dredging, to facilitate boats and flood capacity access, disturbs subtle well-established habitat = avoid excessive dredging.

4.6 Icing of the Lincoln–Tai Tapu Road in winter due to shading from trees = maintain existing well-formed, non-invasive deciduous trees and plant more in gaps to allow winter sun through. Also remove evergreen climbers such as ivy.

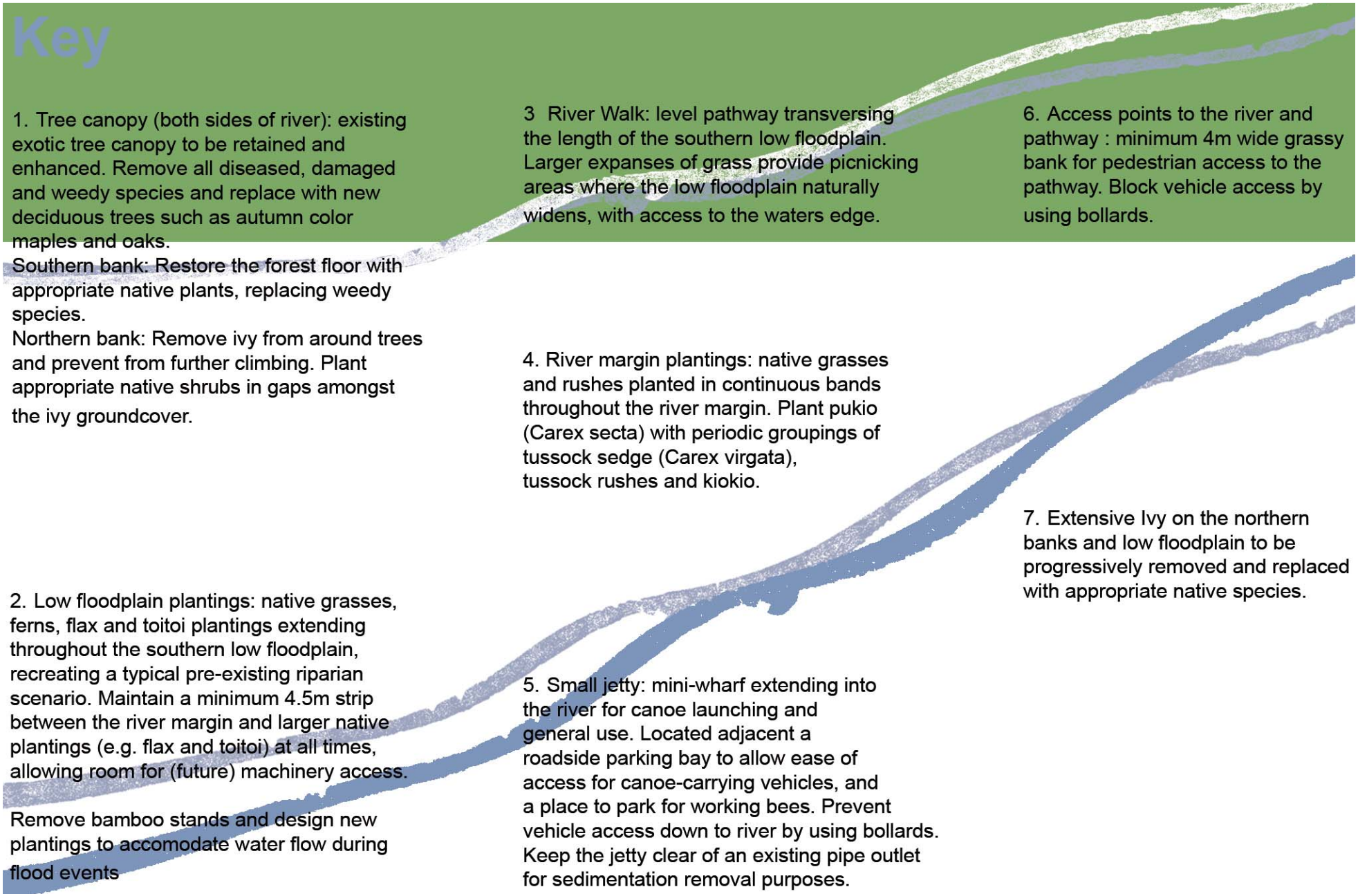
4.7 Current access to stream poor = create pathway in new design along southern low floodplain.

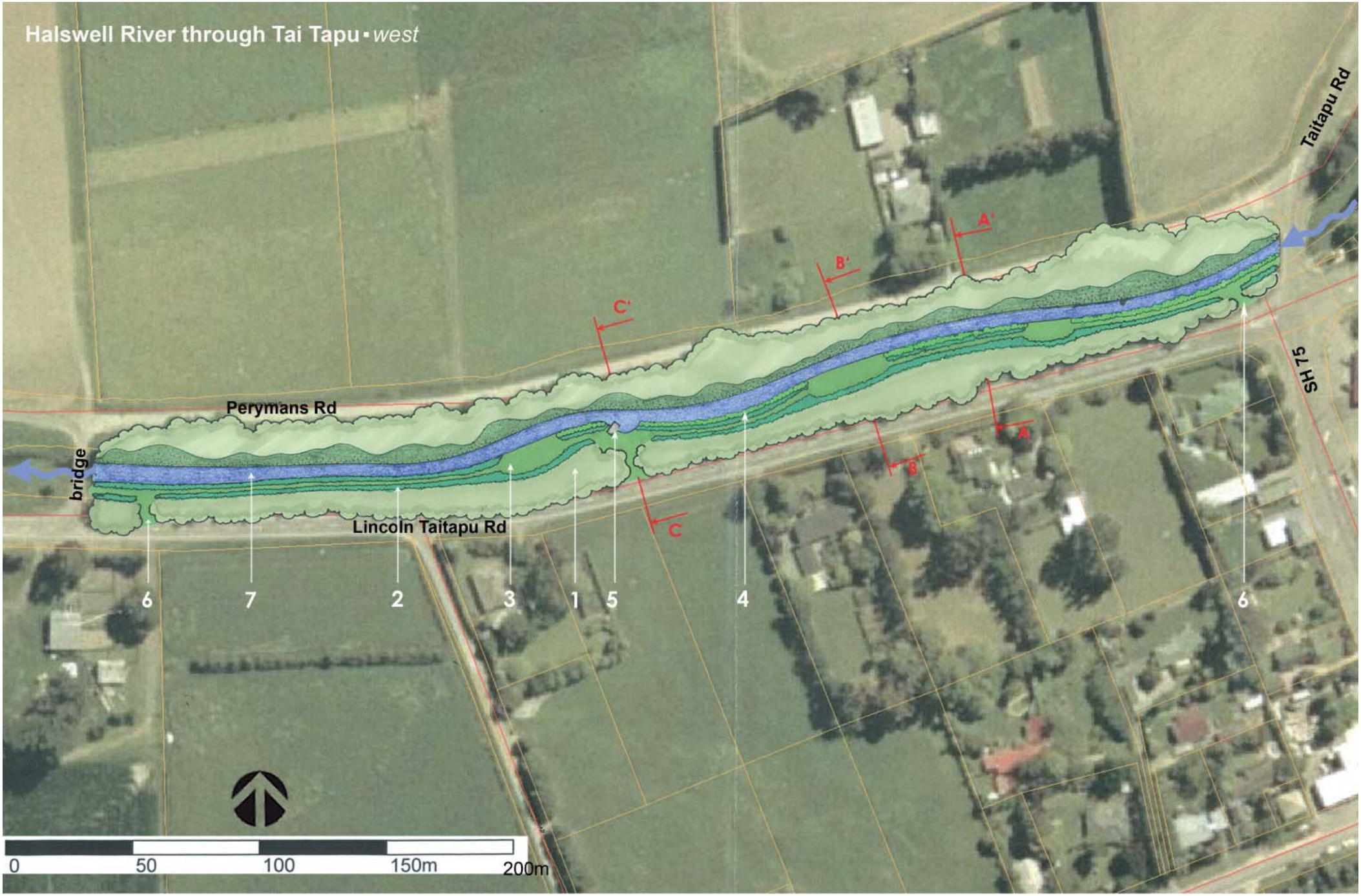
4.8 Maintenance of new plantings requires time, effort and skilled labour = creation of Halswell River Stream Care Group in partnership with Council for maintenance and ongoing enhancement work.

4.9 Community desire to maintain exotic vegetation = retain non-invasive exotic trees and incorporate new deciduous hardwoods.

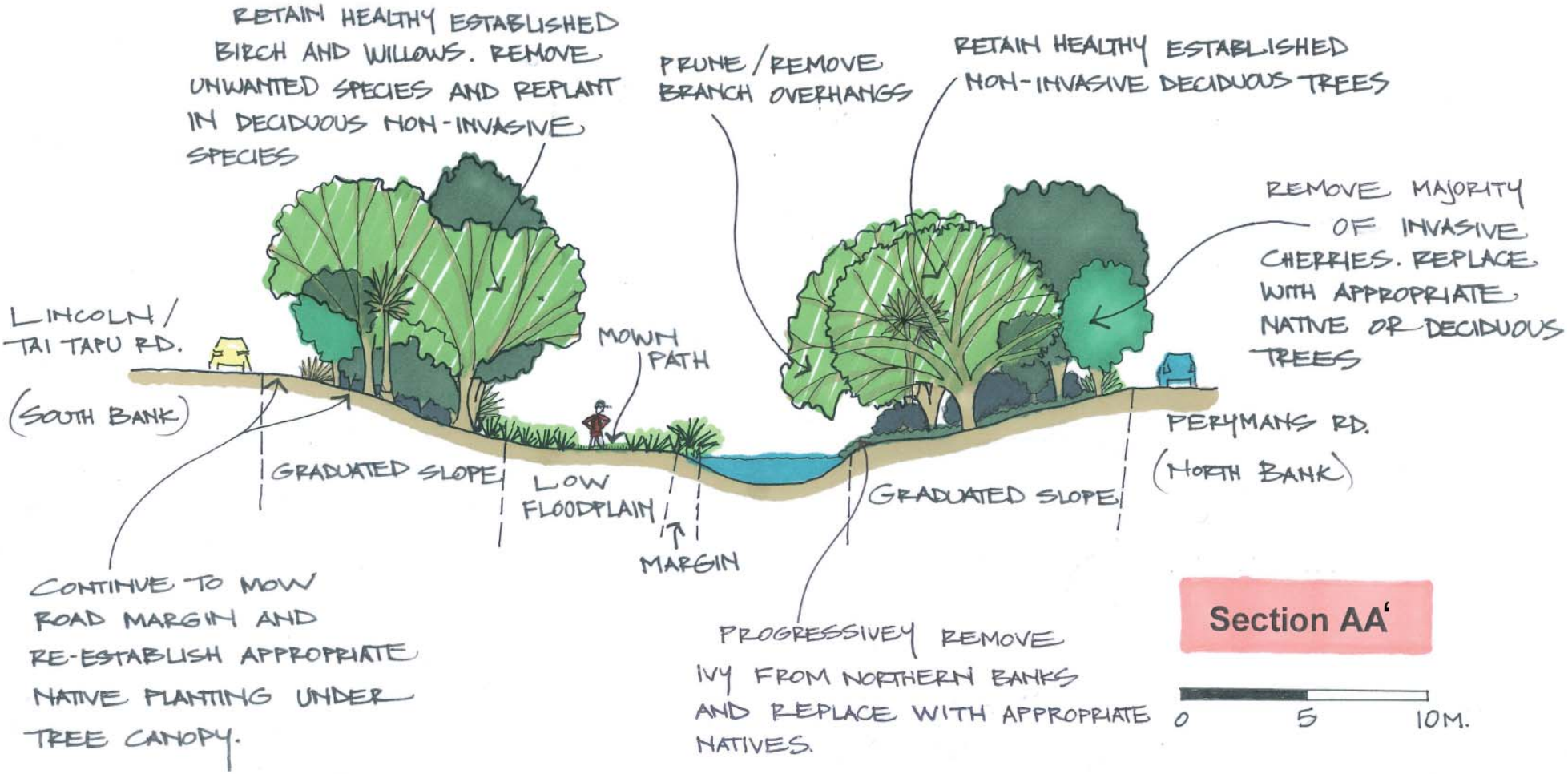
Bamboo clumps block the floodplain

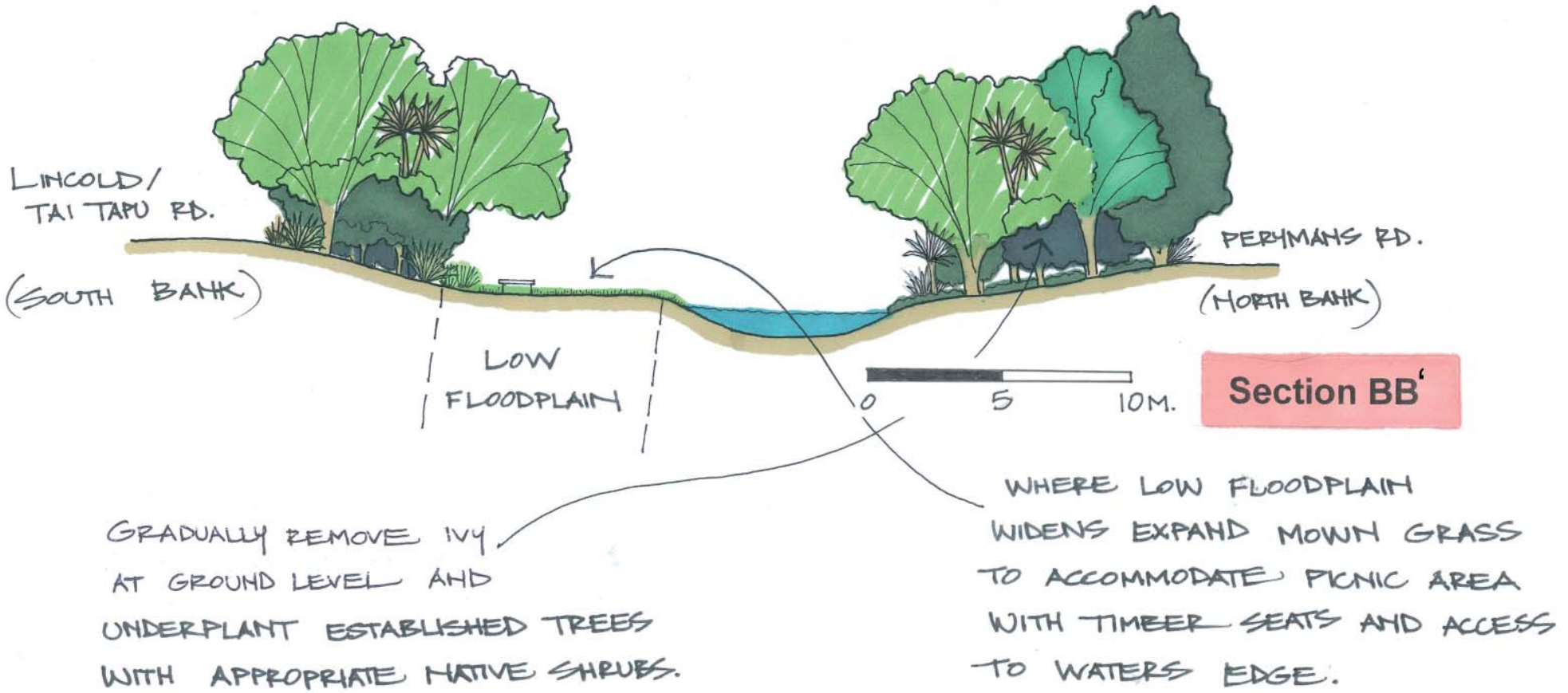
5. Concept Plan

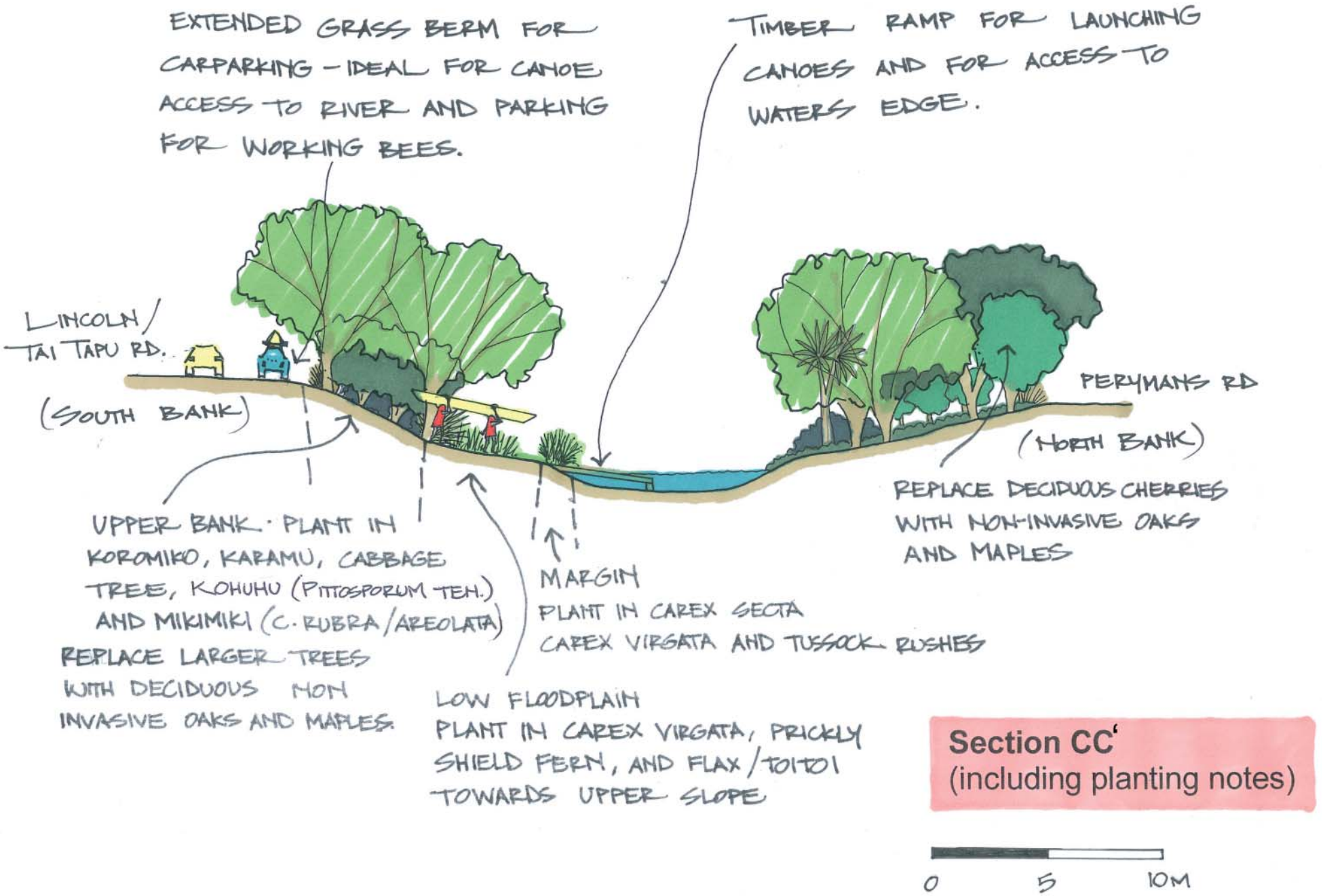



Halswell River through Tai Tapu ▪ west
Taitapu Rd
SH 75
Perymans Rd
bridge
Lincoln Taitapu Rd
A'
B'
C'
A
B
C
6
7
2
3
1
5
4
6
0
50
100
150m
200m

6. Indicative Cross Sections



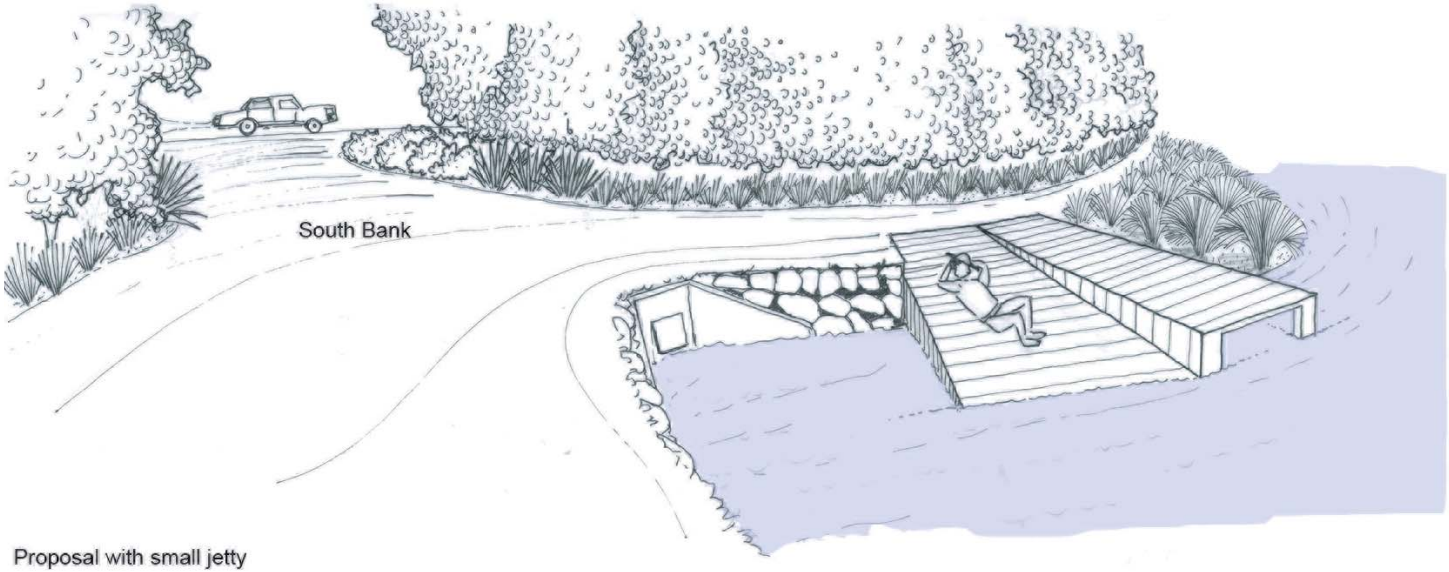

LINCOLD/
TAI TAPU RD.
(SOUTH BANK)
LOW
FLOODPLAIN
PERYMANS RD.
(NORTH BANK)
0
5
10M.
Section BB'
GRADUALLY REMOVE IVY
AT GROUND LEVEL AND
UNDERPLANT ESTABLISHED TREES
WITH APPROPRIATE NATIVE SHRUBS.
WHERE LOW FLOODPLAIN
WIDENS EXPAND MOWN GRASS
TO ACCOMMODATE PICNIC AREA
WITH TIMBER SEATS AND ACCESS
TO WATERS EDGE.



Section CC'
(including planting notes)

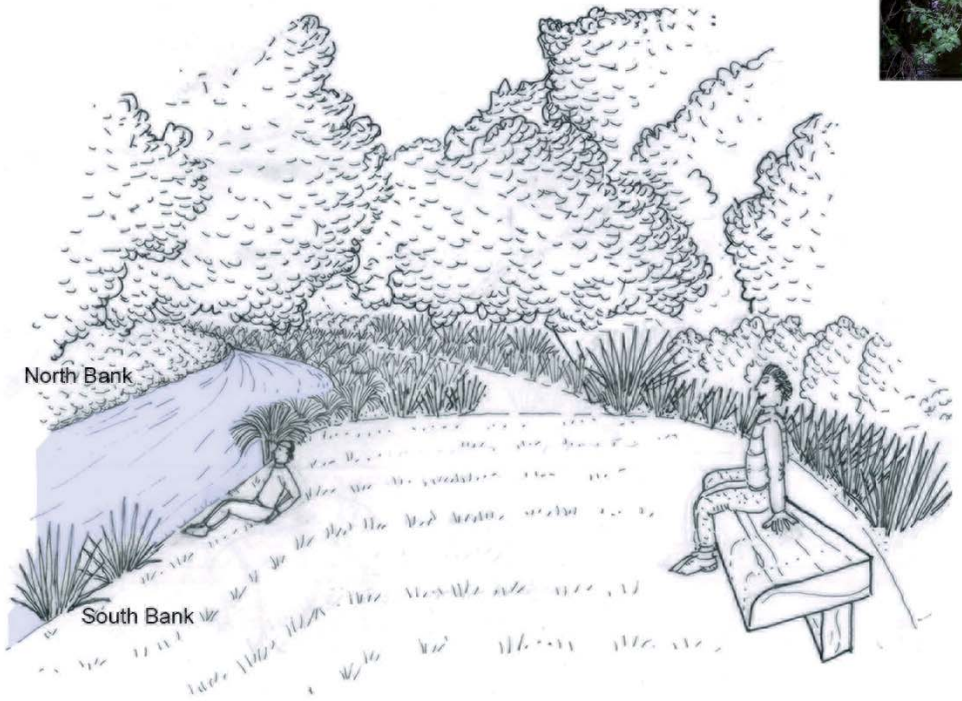
7. Perspective Views

Existing situation



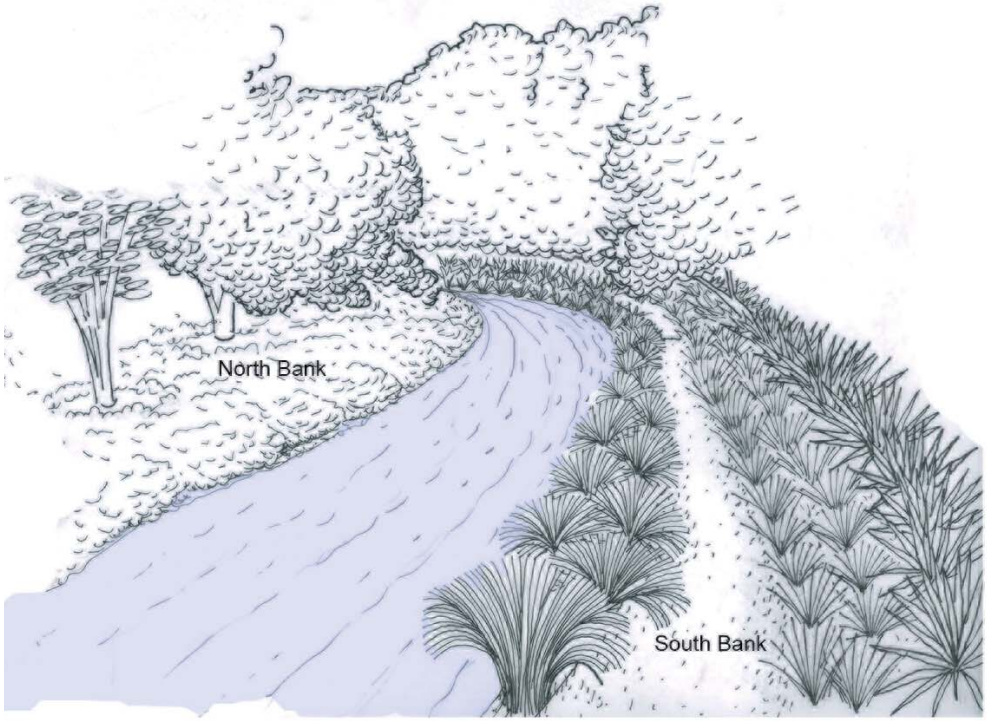
Proposal with small jetty

Existing situation



Proposed picnic area

Existing situation



Proposed pathway along southern low flood plain

8. Design Inspiration

- 8.1 European settlement history expressed in character of existing vegetation = *maintain and enhance deciduous tree canopy*
- 8.2 Unique character of forested riverbanks offers a potentially unique and intimate river experience = *provide a pathway along the rivers edge to allow this opportunity*
- 8.3 Low floodplain a natural flood control = *plant in low grasses that do not inhibit flood waters*
- 8.4 Riparian margins along inland waterways severely modified in Canterbury = *replant in eco-sited native vegetation to restore what once existed*
- 8.5 Riverbed undisturbed after 20 years = *minimize dredging to avoid disturbing subtle habitat*

Carex secta planted at the margins of a Canterbury stream (restoring what once existed)

9. Establishment & Management Approaches

9.1 Pathways and picnic areas
Pathways and picnic areas are to be grassed and managed by mowing or weed-eating (more frequently in the summer months). Where the pathway borders low floodplain plantings grass should be managed by careful mowing, strip spraying by approved applicators, or hand weeding.

9.2 Low floodplain and river margin plantings
Low floodplain and river margin plantings could be established in stages (100m sections at a time) to minimize disturbance. Weed removal at the river margin is best carried out by machine scraping to avoid or minimize chemical use and potential river contamination. Batter the margin at 45 degrees and spot spray weeds as they emerge. The likely required frequency of spot spraying is 3 times a year for the first 5 years to enable new plantings to establish.

Removal of broadleaf weeds, pasture grasses, and annual weeds on the low floodplain should occur via chemical control by approved applicators. Cut weeds to near ground level prior to spraying to facilitate the effectiveness of spray and avoid repeat applications. The technique with [initial] chemical control '*is to do it once and do it right'.*

Physical implementation of the plan and ongoing management could occur in partnership between a yet to be established Tai Tapu River Care Group and the District and / or Regional Council. A Project Manager should be appointed to oversee and co-ordinate all work.

9.3 Tree canopy
The existing tree canopy should be retained in character and practically enhanced. Remove diseased, damaged and unwanted trees and limbs overhanging the river in tandem with the eradication of all ground based and climbing weeds on the southern side of the river. Canopy gaps replanted with non-invasive exotics such as oaks would facilitate the filtering of winter sun. Limited stands of kahikatea should be considered in selective locations. The forest floor and sub-canopy in turn should be established with appropriate eco-sited native vegetation.

The northern low floodplain and bank are currently covered in a ground matt of ivy, which climbs to smother trees. The management approach here is to retain the ivy initially at ground level, while removing from around trees and preventing further climbing via spot chemical applications. Native shrubs, ferns and groundcovers could be established at ground level under the canopy as the remaining ivy is progressively removed and controlled.

9.4 The river and dredging machinery
Apart from the effects of weed cutting, the study area of river has a bed undisturbed for some 20 years and contains subtle riverine habitat that would be eliminated by widespread dredging.

The current flow appears to be relatively unimpeded and we wish to avoid excessive dredging. We therefore propose a partial dredging of the riverbed at critical flow points such as adjacent significant bends, along with the removal of riverbank bamboo stands, and the utilization of the low floodplains for accommodating flood waters. These are suggested means of ensuring adequate water flow capacity during flood events.

We propose a monitoring scheme be developed to assess both in-stream and riparian wildlife and plant communities.

Dredging machinery will be able to access the southern low floodplain via 4m wide managed gaps at either end of the tree canopy. It will be possible to drive along the length of the low floodplain over well-established grasses in 20 years time. A degree of plant loss is expected where the machinery works intensively and turns repeatedly. Overall permanent plant loss is expected to be minor as the capacity for plants to recover from limited compaction is fair.

Weed Management
Managing unwanted plants is a key task for riparian management. Take care to manage weeds through avoiding and discouraging invasive species. Aim for maximum weed prevention.

9.5 SHADE WEEDS OUT
Many plants will not establish in shade. Use shade to prevent weed growth in the water and on the land. Plant and manage vegetation to have maximum

shade over the water and on non-mown ground during the growing season.

Have a dense forest canopy, and/or dense ground cover to shade the ground and minimise opportunity for weeds to establish. Clearance may need to be phased to enable some protective canopy to be maintained and avoid a weed outbreak. For example, willows can be successfully thinned and in some areas planted beneath, and eventually phased out. Their canopy inhibits weeds and protects young plantings.

A well-treed river corridor provides a distinctive river environment, a local landmark and useful shelter for adjoining lands. However, care is needed to avoid overly shading the road and recreational spaces. Removal of weeds including the climbers will assist in opening the canopy to allow filtered winter sun to reach the road.

9.6. CROWD WEEDS OUT

Dense plantings and minimal bare ground limit the opportunity for most unwanted plants to establish.

9.7. LIMIT SEED SPREAD

To limit spreading plants, take care with plant selection and management. Consider seed dispersal mechanisms.

Use and retain only the exotic trees that have heavy seed that will not spread downstream, e.g. oaks. In the case of cherries, remove younger trees and seedlings and consider retaining some older well-established cherry trees for their fruiting value. However, if some trees are retained there will be an on-going requirement for the control of young seedlings, as cherry seed is prolifically distributed by birds (and people!). In light of these factors, this is a decision the local community should consider and make judgement on.

Don’t retain or use other exotics with fleshy fruits that birds distribute, such as plums, blackberry and ivy. Ivy fruits only when it climbs. So for any ivy to be retained in the interim, manage it as a low groundcover, to avoid it fruiting and spreading beyond.

Don’t retain or use exotics with light seeds that are spread by wind or water – e.g. sycamore and Old Mans Beard.

Old Mans Beard over cabbage tree

10. Plant List

Plants to remove

Forest canopy	most cherries, holly, sycamore, bamboo, ivy, old mans beard. (Willow – prune back, retain where possible)
Low Floodplain and River Margin	ivy, pasture grasses, potato weed, blackberry + numerous annual weeds

New Plantings

Forest canopy*:*

English oak	*Quercus robur* (north bank)
kahikatea, white pine	*Dacrycarpus dacrydioides*

Forest subcanopy:

five finger, whauwhaupaku	*Pseudopanax arboreus*
kapuka, broadleaf	*Griselinia littoralis*
karamu	*Coprosma robusta*
koromiko	*Hebe salicifolia*
cabbage tree, ti kouka	*Cordyline australis*
mikimiki	*Coprosma rubra, C. areolata*
kohuhu, black matipo	*Pittosporum tenuifolium*

Low Floodplain

shield ferns	*Polystichum vestitum, P. richardii*
tussock sedge	*Carex virgata*
toitoi	*Cortaderia richardii*
harakeke, NZ flax	*Phormium tenax*

River Margin

tussock sedge	*Carex virgata*
pukio	*Carex secta*
tussock rushes	*Juncus gregiflorus, J. pallidus*
swamp kiokio	*Blechnum minus*

11. References

Lucas Associates. 2001. "*Caring for streams of the Canterbury Plains: a guide to riparian management"* Environment Canterbury. (A5 format, 13 pages)

Lynn, Ian. *Land Types of the Selwyn District*. Landcare Research, 1:50,000 mapping for Selwyn District Council.

Plan prepared by Carl Pickens, Di Lucas & Radka Novotna, landscape architects, Lucas Associates Ltd, in association with Rob Blakely, natural resources engineer

Front cover: view upstream along view to highway bridge and memorial obelisk. Port Hills beyond.