

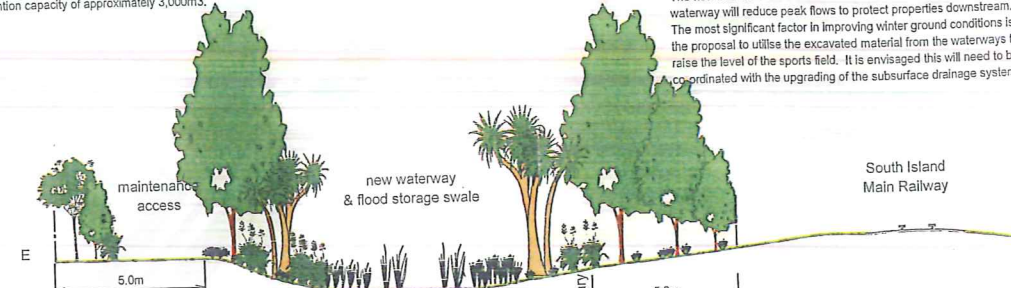
**KRUSES WATERWAY**  
 Existing timber lined drain sits within and alongside the Papanui High School grounds. Naturalisation includes realigning and defining main channel with rock edging and the formation of a small wetland complex within northern corner of school grounds. The naturalisation and wetland provides extra flood capacity of 500 - 1,000m<sup>3</sup>.

**PLANTING PROPOSALS**  
 In pre-European times a substantial parcel of lowland podocarp swamp forest existed throughout this area. Unlike Riccarton Bush none of this forest remains today. The proposals for flood mitigation and waterway restoration provide an opportunity to recreate some of the podocarp swamp forest.  
 The species list includes: Vineberry, bush lily, marbleleaf, small leaved coprosmas, karamu, mikimiki, cabbage trees, kaihikatea, hinau, pokaka, broadleaf, pigeonwood, lacebark, kanuka, manuka, mahoe, mapou, takamako, lemonwood, kokuhu, ribbonwood, totara, matai, flycatcher, lacewood, kowhai and turepo.  
 In order to optimise the flood detention capacity of the new waterways and create large areas of low growing wetland reeds and rushes are proposed for low lying areas. The associations include sedges, (carex spp), rushes (uncol spp), lake club rush and raupo.



**DETENTION BASIN**  
 Large triangle (0.78ha) presently owned by Firestone Tyre Factory. Excavate to an average depth of 1.2m. Form a complex of shallow ponds, waterways, and gently sloping banks enclosed within a low bund. Plant margins and low islands with podocarp swamp forest associations and establish wetland reed beds throughout floor of basin. Detention capacity of approximately 3,000m<sup>3</sup>.

**PAPANUI HIGH SCHOOL: ACCESS AND USE OF SPORTS FIELDS**  
 At present the timbered drain creates a uniform barrier between the Domain and the school. Proposals include year round access across the naturalised waterway. Timber bridges are regularly spaced and connected via pathways and/or the grass verge to the sports fields. The bridges also provide access to the cycleway, domain facilities and League Clubrooms.  
 Proposals include re-aligning a portion of the cycleway away from the railway line and through the enhanced wetland and waterway environment. Access to the water's edge via timber steps, is also proposed at two defined locations.  
 Significant improvements to the year round use of the schools rugby field is anticipated. This would be achieved by removal of the larger conifer shelterbelt which presently shades and shelters this ground. The new detention basins and increased cross-sectional area of the waterway will reduce peak flows to protect properties downstream. The most significant factor in improving winter ground conditions is the proposal to utilise the excavated material from the waterways to raise the level of the sports field. It is envisaged this will need to be co-ordinated with the upgrading of the subsurface drainage system.



**NEW WATERWAY**  
 Obtain corridor of land from Firestone for waterway & flood storage swale from Langdons Road to Detention Basin. Minimum 15m width from railway boundary, preferred width of 20m caters for maintenance access and future recreation corridor. Extend regrading and planting 5 metres into railway corridor - establish podocarp forest, shrub swamp and reed bed associations throughout corridor. Area of corridor approx 0.65ha, with detention capacity of approx 2000m<sup>3</sup>.

**AIM:** increase flood storage, access, heritage, recreation, ecology and amenity values.

- OBJECTIVES**
1. Provide flood capacity for upstream catchment.
  2. Naturalise and enhance Kruses Drain.
  3. Provide planting proposals.
  4. Improve access between school and domain.
  5. Improve drainage of school sports fields.

- ADDED VALUES**
- Landscape values will be improved with the replacement of the old and somewhat unattractive shelterbelt with new plant associations and specimen trees. Views of the enhanced waterways will be provided along with visual connections between the Domain and the school grounds.
  - Ecological values of the area will be substantially enhanced through the re-establishment of new wetlands, plant associations and habitats.
  - Cultural values are recognised with the new plant associations providing educational and interpretation opportunities.
  - Heritage is acknowledged in terms of the natural values of the original forest, and the cultural values local Maori attached to this forest.
  - Recreational values, both passive and active, will be enhanced with improved sports fields, access, connections, pathways and seats.
  - Drainage will be substantially improved with the increase capacity of the naturalised waterway and the wetland basins providing flood relief for downstream properties.

**KRUSES DRAIN  
 FLOOD DETENTION AT FIRESTONE/PAPANUI DOMAIN  
 LANDSCAPE DEVELOPMENT PROPOSALS**

